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for
Minnesota

Water Year 1975

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U.S. DEPARTMENT OF THE INTERIOR
MARCH 3, 1849

U.S. GEOLOGICAL SURVEY WATER-DATA REPORT MN-75-1

Prepared in cooperation with the Minnesota Department of
Natural Resources, Division of Waters; the Minnesota
Department of Highways; and with other State, municipal
and Federal agencies

Water Resources Data for Minnesota

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UNITED STATES DEPARTMENT OF THE INTERIOR

THOMAS S. KLEPPE, Secretary

GEOLOGICAL SURVEY

V. E. McKelvey, Director

Prepared in cooperation with

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1976

Preface

This report was prepared by the U.S. Geological Survey in cooperation with the State of Minnesota and with other agencies by personnel of the Minnesota district of the Water Resources Division under the supervision of C. R. Collier, District Chief, and J. T. Callahan, Regional Hydrologist, Northeastern Region.

This report is one of a series issued State by State under the general direction of J. S. Cragwall, Jr., Chief Hydrologist, and G. W. Whetstone, Assistant Chief Hydrologist for Scientific Publications and Data Management.

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WATER RESOURCES DATA FOR MINNESOTA, 1975

Section 1. Surface-Water Records
Section 2. Water-Quality Records
Section 3. Ground-Water Records

INTRODUCTION

Water resources data for the 1975 water year for Minnesota consist of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water-levels and water quality of wells and springs. This report contains discharge records for 127 gaging stations; stage only records for 1 gaging station; stage and contents for 9 lakes and reservoirs; water quality for 40 gaging stations, 25 lakes, and 60 wells; and water levels for 25 observation wells. Also included are data for 149 crest-stage partial-record stations and 157 low-flow partial-record stations. Additional water data were collected at various sites, not part of the systematic data collection program, and are published as miscellaneous measurements. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State and Federal agencies in Minnesota.

Records of discharge (or stage) of streams, and contents (or stage) of lakes and reservoirs were first published in a series of U.S. Geological Survey water-supply papers entitled, "Surface Water Supply of the United States." Through water year 1960, these water-supply papers were in an annual series and then in a 5-year series for 1961-65 and 1966-70. Records of chemical quality, water temperatures, and suspended sediment were published from 1941 to 1970 in an annual series of water-supply papers entitled, "Quality of Surface Waters of the United States." Records of ground-water levels were published from 1935 to 1974 in a series of water-supply papers entitled, "Ground-Water Levels in the United States."

Beginning with the 1961 water year and continuing through water year 1974, streamflow data have been released by the Geological Survey in annual reports on a State-boundary basis. Water-quality records beginning with the 1964 water year have been similarly released either in separate reports or in conjunction with streamflow records. These reports provided rapid release of preliminary water data shortly after the end of the water year. The final data were then released in the water-supply paper series mentioned above. Beginning with the 1975 water year, water data will be released on a State-boundary basis in final form and will not be republished in the water-supply paper series. The 1975 and subsequent water year reports will be in a series which will carry an identification number consisting of the two-letter State abbreviation, the last two digits of the water year, and the volume number. For example, this report is identified as "U.S. Geological Survey Water-Data Report IN-75-1." These reports are for sale to the public for a nominal fee from the National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia, 22151. For more information on publications available, see "PUBLICATIONS" on a subsequent page.

COOPERATION

The U.S. Geological Survey and organizations of the State of Minnesota have had cooperative agreements for the systematic collection of streamflow records since 1909, and for water-quality records since 1952. Organizations that supplied data are acknowledged in station descriptions. Organizations that assisted in collecting data through cooperative agreement with the Survey are:

Minnesota Department of Natural Resources, Division of Waters, Soils and Minerals, Eugene R. Gere, director.

Minnesota Department of Highways, R. G. Lappegaard, commissioner.

Metropolitan Waste Control Commission of the Twin Cities Area, Milton C. Hansey, Chairman.

Pelican River Watershed District, Dr. T. A. Rogstad, chairman.

Assistance in the form of funds or services was given by the Corps of Engineers, U.S. Army, in collecting records for 40 gaging stations and 8 water-quality stations published in this report.

Several gaging stations in the Hudson Bay and St. Lawrence River basins were maintained by funds appropriated to the United States Department of State.

On waters adjacent to the international boundary, certain gaging stations are maintained by the United States (or Canada) under agreement with Canada (or the United States), and the records are obtained and compiled in a manner equally acceptable in both countries. These stations are designated herein as "International gaging stations."

Some records for the Red River of the North, which border the State on the west, were obtained at the request of other Federal agencies as a part of the program of the U.S. Department of the Interior for development of the Missouri River basin.

DEFINITION OF TERMS

Terms related to streamflow, water-quality, and other hydrologic data, as used in this report, are defined below. See also table for converting English units to International System of units (SI) on page 31.

Acre-foot (AC-FT, acre-ft) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic metres.

Aquifer is a geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

Bacteria are microscopic unicellular organisms, typically spherical, rod-like, or spiral and threadlike in shape, often clumped into colonies. Some bacteria cause disease, others perform an essential role in nature in the rycycling of materials; for example, by decomposing organic matter into a form available for reuse by plants.

> Total coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria which ferment lactose with gas formation within 48 hours at 35°C. In the laboratory these bacteria are defined as all the organisms which produce colonies with a golden-green metallic sheen within 24 hours when incubated at 35°C ± 1.0°C on M-Endo medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 ml of sample.
>
> Fecal coliform bacteria are bacteria that are present in the intestine or feces of warmblooded animals. They are often used as indicators of the sanitary quality of the water. In the laboratory they are defined as all organisms which produce blue colonies within 24 hours when incubated at 44.5°C ±

0.2°C on M-FC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 ml of sample.

Fecal streptococcal bacteria are bacteria found also in the intestine of warmblooded animals. Their presence in water is considered to verify fecal pollution. They are characterized as gram-positive, cocci bacteria which are capable of growth in brain-heart infusion broth. In the laboratory they are defined as all the organisms which produce red or pink colonies within 48 hours at 35°C ± 1.0°C on M-enterrococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 ml of sample.

Bed material is the shifting portion of fragmented material of which the streambed is composed.

Biochemical oxygen demand (BOD) is a measure of the quantity of dissolved oxygen, in milligrams per litre, used for the decomposition of organic matter by microorganisms, such as bacteria.

Biomass is the amount of living matter present at any given time, expressed as the weight per unit area or volume of habitat.

Ash weight is the weight or amount of residue present after the residue from the dry weight determination has been ashed in a muffle furnace at a temperature of 500°C for 1 hour. The ash weight values of zooplankton and phytoplankton are expressed in g/m^3 (grams per cubic metre), and periphyton and benthic organisms in g/m^2 (grams per square metre).

Dry weight refers to the weight of residue present after drying in an oven at 60°C for zooplankton and 105°C for periphyton, until the weight remains unchanged. This weight represents the total organic matter, ash and sediment, in the sample. Dry weight values are expressed in the same units as ash weight.

Organic weight or volatile weight of the living substance is the difference between the dry weight and the ash weight, and represents the actual weight of the living matter. The organic weight is expressed in the same units as for ash and dry weights.

Cfs-day is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, approximately 1.9835 acre-feet, or about 646,000 gallons or 2,445 cubic metres. It represents a runoff of approximately 0.0372 inch from 1 square mile or 0.3468 millimetre from 1 square kilometre.

Chemical oxygen demand (COD) indicates the quantity of oxidizable compounds in water and varies with water composition(s), temperature, period of contact, and other factors.

Chlorophyll refers to the green pigments of plants. Chlorophyll a and b are the two most common green pigments in plants.

Contents is the volume of water in a reservoir, lake, stream or aquifer. Contents herein is that of a reservoir or lake and unless otherwise indicated, is computed on the basis of a level pool and does not include bank storage.

Control designates a feature downstream from the gage that determines the stage-discharge relation at the gage. This feature may be a natural constriction of the channel, an artificial structure, or a uniform cross section over a long reach of the channel.

Cubic feet per second per square mile (CFSM) is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming that the runoff is distributed uniformly in time and area.

Cubic foot per second (CFS, cfs) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to approximately 7.48 gallons per second or 448.8 gallons per minute or 0.02832 cubic metres per second.

Discharge is the volume of water (or more broadly, total fluids), that passes a given point within a given period of time.

Mean discharge is the arithmetic average of individual daily mean discharges during a specific period.

Instantaneous discharge is the discharge at a given time.

Dissolved refers to the amount of a substance present in true chemical solution. In practice, however, the term includes all forms of the substance that will pass through a 0.45-micrometre membrane filter, and thus may include some very small (colloidal) suspended particles. Analyses are performed on filtered samples.

Diversity index is a numerical rating of the variety of the aquatic organisms. The greater the number of different types of organisms, the greater the diversity. The formula for diversity index is $d = -\Sigma \frac{ni}{n} \log_2 \frac{ni}{n}$, where ni is the number of individuals per taxon, and n is the total number of individuals.

Drainage area of a stream at a specified location is that area, measured in a horizontal plane, enclosed by a topographic divide from which direct surface runoff from precipitation normally drains by gravity into the stream above the specified point. Figures of drainage area given herein include all closed basins, or noncontributing areas, within the area unless otherwise noted.

Gage height (G.H.) is the water-surface elevation referred to some arbitrary gage datum. Gage height is often used interchangeably with the general term "stage," although gage height is more appropriate when used with a reading on a gage.

Gaging station is a particular site on a stream, canal, lake, or reservoir where systematic observations of gage height or discharge are obtained. When used in connection with a discharge record, the term is applied only to those gaging stations where a continuous record of discharge is computed.

Hardness of water is a physical-chemical characteristic that is commonly recognized by the increased quantity of soap required to produce lather. It is attributable to the presence of alkaline earths (principally calcium and magnesium) and is expressed as equivalent calcium carbonate ($CaCO_3$).

Micrograms per litre (UG/L, µg/l) is a unit expressing the concentration of chemical constituents in solution as the weight (micrograms) of solute per unit volume (litre) of water. One thousand micrograms per litre is equivalent to one milligram per litre.

Milligrams per litre (MG/L, mg/l) is a unit for expressing the concentration of chemical constituents in solution. Milligrams per litre represents the weight of solute per unit volume of water. Milligrams or micrograms per litre may be converted to milliequivalents (one thousandth of a gram-equivalent weight of a constituent) per litre by multiplying by the factors in table 1, page 8. Concentration of suspended sediment also is expressed in mg/l, and is based on the weight of sediment per litre of water-sediment mixture. Sediment concentrations may be converted to parts per million by using the factors in table 2, page 8.

Organism is any living entity, such as an insect, phytoplankter, or zooplankter.

Cells/volume refers to the number of cells of any organism which is counted by using a microscope and grid or counting cell. Many planktonic organisms are multicelled and are counted according to the number of contained cells per sample volume, usually millilitres (ml) or litres (l).

Partial-record station is a particular site where limited streamflow or water-quality data are collected systematically over a period of years for use in hydrologic analyses.

Particle size is the diameter, in millimetres (mm), of suspended sediment or bed material determined by either sieve or sedimentation methods. Sedimentation methods (pipet, bottom-withdrawal tube, visual-accumulation tube) determine fall diameter of particles in either distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling).

Particle-size classification used in this report agrees with recommendations made by the American Geophysical Union Subcommittee on Sediment Terminology. The classification is as follows:

Classification	Size (mm)	Method of analysis
Clay............	0.00024 - 0.004	Sedimentation.
Silt............	.004 - .062	Sedimentation.
Sand............	.062 - 2.0	Sedimentation or sieve.
Gravel..........	2.0 - 64.0	Sieve.

The particle-size distribution given in this report is not necessarily representative of all particles in transport in the stream. Most of the organic material is removed and the sample is subjected to mechanical and chemical dispersion before analysis in distilled water. Chemical dispersion is not used for native-water analysis.

Table 1.--Factors for conversion of chemical constituents in milligrams or micrograms per litre to milliequivalents per litre

Ion	Multiply by	Ion	Multiply by
Aluminum (Al^{+3})*....	0.11119	Iodide (I^{-1})......	0.00788
Ammonia as NH_4^{+1}....	.05544	Iron (Fe^{+3})*......	.05372
Barium (Ba^{+2}).......	.01456	Lead (Pb^{+2})*......	.00965
Bicarbonate (HCO_3^{-1})	.01639	Lithium (Li^{+1})*...	.14411
Bromide (Br^{-1})......	.01251	Magnesium (Mg^{+2})..	.08226
Calcium (Ca^{+2})......	.04990	Manganese (Mn^{+2})*.	.03640
Carbonate (CO_3^{-2})...	.03333	Nickel (Ni^{+2})*....	.03406
Chloride (Cl^{-1}).....	.02821	Nitrate (NO_3^{-1})...	.01613
Chromium (Cr^{+6})*....	.11539	Nitrite (NO_2^{-1})...	.02174
Cobalt (Co^{+2})*......	.03394	Phosphate (PO_4^{-3}).	.03159
Copper (Cu^{+2})*......	.03148	Potassium (K^{+1})...	.02557
Cyanide (CN^{-1})......	.03844	Sodium (Na^{+1}).....	.04350
Fluoride (F^{-1})......	.05264	Strontium (Sr^{+2})*.	.02283
Hydrogen (H^{+1})......	.99209	Sulfate (SO_4^{-2})...	.02082
Hydroxide (OH^{-1})....	.05880	Zinc (Zn^{+2})*......	.03060

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*Constituent reported in micrograms per litre; multiply by factor and divide results by 1,000.

Table 2.--Factors for conversion of sediment concentration in milligrams per litre to parts per million*
(All values calculated to three significant figures)

Range of concentration in 1000 mg/l	Divide by	Range of concentration in 1000 mg/l	Divide by	Range of concentration in 1000 mg/l	Divide by	Range of concentration in 1000 mg/l	Divide by
0 - 8	1.00	201-217	1.13	411-424	1.26	619-634	1.39
8.05- 24	1.01	218-232	1.14	427-440	1.27	636-650	1.40
24.2 - 40	1.02	234-248	1.15	443-457	1.28	652-666	1.41
40.5 - 56	1.03	250-264	1.16	460-473	1.29	668-682	1.42
56.5 - 72	1.04	266-280	1.17	476-489	1.30	684-698	1.43
72.5 - 88	1.05	282-297	1.18	492-506	1.31	700-715	1.44
88.5 -104	1.06	299-313	1.19	508-522	1.32	717-730	1.45
105 -120	1.07	315-329	1.20	524-538	1.33	732-747	1.46
121 -136	1.08	331-345	1.21	540-554	1.34	749-762	1.47
137 -152	1.09	347-361	1.22	556-570	1.35	765-780	1.48
153 -169	1.10	363-378	1.23	572-585	1.36	782-796	1.49
170 -185	1.11	380-393	1.24	587-602	1.37	798-810	1.50
186 -200	1.12	395-409	1.25	604-617	1.38		

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*Based on water density of 1.000 g/ml and a specific gravity of sediment of 2.65.

Percent composition is a unit for expressing the ratio of a particular part of a sample or population to the total sample or population, in terms of types, numbers, weight, or volume.

Periphyton is the assemblage of microorganisms attached to and growing upon solid surfaces. While primarily consisting of algae, they also include bacteria, fungi, protozoa, rotifers, and other small organisms. Periphyton is a useful indicator of water quality.

Phytoplankton is the plant part of the plankton. They are usually microscopic and their movement is subject to the water currents. Phytoplankton growth is dependent upon solar radiation and nutrient substances. Because they are able to incorporate as well as release materials to the surrounding water, the phytoplankton have a profound effect upon the quality of the water. They are the primary food producers in the aquatic environment, and are commonly known as algae.

Runoff in inches (IN, in) shows the depth to which the drainage area would be covered if all the runoff for a given time period were uniformly distributed on it.

Sediment is solid material that originates mostly from disintegrated rocks and is transported by, suspended in, or deposited from water; it includes chemical and biochemical precipitates and decomposed organic material such as humus. The quantity, characteristics, and cause of the occurrence of sediment in streams are influenced by environmental factors. Some major factors are degree of slope, soil characteristics, land usage, and quantity and intensity of precipitation.

> Suspended sediment is the sediment that at any given time is maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid.
>
> Suspended-sediment discharge is the rate at which dry weight of sediment passes a section of a stream or is the quantity of sediment, as measured by dry weight, or by volume, that is discharged in a given time. It is computed by multiplying discharge times mg/l times 0.0027.
>
> Total sediment discharge or total sediment load is the sum of the suspended-sediment discharge and the bed-load discharge. It is the total quantity of sediment, as measured by dry weight or volume, that is discharged during a given time.

Suspended sediment concentration is the velocity-weighted concentration of suspended sediment in the sampled zone (from the water surface to a point approximately 0.3 ft above the bed) expressed as milligrams of dry sediment per litre of water-sediment mixture (mg/l).

Mean concentration is the time-weighted concentration of suspended sediment passing a stream section during a 24-hour day.

Sodium-adsorption-ratio (SAR) is the expression of relative activity of sodium ions in exchange reactions with soil and is an index of sodium or alkali hazard to the soil. Waters range in respect to sodium hazard from those which can be used for irrigation on almost all soils to those which are generally unsatisfactory for irrigation.

Solute is any substance derived from the atmosphere, vegetation, soil, or rocks that is dissolved in water.

Specific conductance is a measure of the ability of a water to conduct an electrical current and is expressed in micromhos per centimetre at 25°C. Because the specific conductance is related to the number and specific chemical types of ions in solution, it can be used for approximating the dissolved-solids content in the water. Commonly, the amount of dissolved solids (in milligrams per litre) is about 65 percent of the specific conductance (in micromhos). This relation is not constant from stream to stream or from well to well, and it may even vary in the same source with changes in the composition of the water.

Stage-discharge relation is the relation between gage height and the volume of water per unit of time, flowing in a channel.

Substrate is the physical surface upon which an organism lives.

Natural substrates refers to any naturally occurring emersed or submersed solid surface, such as a rock or tree, upon which an organism lives.

Artificial substrate is a device which is purposely placed in a stream or lake for colonization of organisms. The use of artificial substrates simplifies the community structure by standardizing the substrate from which each sample is taken. Examples of artificial substrates are basket samplers (made of wire cages filled with clean streamside rocks) and multi-plate samplers (made of hardboard) for benthic organism collection, and plexiglass strips for periphyton collection.

Thermograph is a thermometer that continuously and automatically records, on a chart, the water temperature of a stream. "Temperature recorder" is the term used to indicate the presence of a thermograph or a digital mechanism that automatically records water temperatures on paper tape.

Time-weighted average is computed by multiplying the number of days in the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the stream each day for the water year.

Total (as used in tables of chemical analyses) refers to the amount of a substance that is present both in solution and in suspension. Analyses are performed on representative samples of water-suspended sediment mixtures.

Tons per acre-foot indicates the dry weight of dissolved solids in 1 acre-foot of water. It is computed by multiplying the concentration in milligrams per litre by 0.00136.

Tons per day is the quantity of a substance in solution or suspension that passes a stream section during a 24-hour day.

Weighted average is used in this report to indicate discharge-weighted average. It is computed by multiplying the discharge for a sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the sum of the discharges. A discharge-weighted average approximates the composition of water that would be found in a reservoir containing all the water passing a given location during the water year after thorough mixing in the reservoir. See also table for converting English Units to International Units on page 31.

WRD is used as an abbreviation for "Water Resources Data" in the summary REVISIONS paragraph to refer to previously published State annual basic-data reports.

WSP is used as an abbreviation for "Water-Supply Paper" in references to previously published reports.

SPECIAL NETWORKS AND PROGRAMS

Hydrologic bench-mark station is one that provides hydrologic data for a basin in which the hydrologic regimen will likely be governed solely by natural conditions. Data collected at a bench-mark station may be used to separate effects of natural from manmade changes in other basins which have been developed and in which the physiography, climate, and geology are similar to those in the undeveloped bench-mark basin.

Radiochemical program is a network of regularly sampled water-quality stations where additional samples are collected twice a year (at high and low flow) to be analyzed for radioisotopes. The streams that are sampled represent major drainage basins in the conterminous United States.

Radioisotopes are isotope forms of an element that exhibit radioactivity. Isotopes are varieties of a chemical element that differ in atomic weight, but are very nearly alike in chemical properties. The difference arises because the atoms of the isotopic forms of an element differ in the number of neutrons in the nucleus. For example: Ordinary chlorine is a mixture of isotopes having atomic weights 35 and 37, with the natural mixture having atomic weight about 35.453. Many of the elements similarly exist as mixtures of isotopes, and a great many new isotopes have been produced in the operation of nuclear devices such as the cyclotron (Rose, 1966). There are 275 isotopes of the 81 stable elements in addition to over 800 radioactive isotopes.

Radioisotopes that are determined in this program are natural uranium in µg/l (micrograms per litre), radium as radium - 226 in PC/L, (pCi/l, picocuries per litre), gross beta radiation as equivalent strontium/yttrium-90 or cesium-137 in PC/L, and gross alpha radiation as micrograms of uranium equivalent per litre (µg/l). Gross alpha and beta radioactivity associated with the fine grained (silt and clay sized) sediments in the samples are also determined.

A picocurie (PC, pCi) is one trillionth (1×10^{-12}) of the amount of radioactivity represented by a curie (Ci). A curie is the amount of radioactivity that yields 3.7×10^{10} radioactive disintegrations per second. A picocurie yields 2.22 dpm (disintegrations per minute).

DOWNSTREAM ORDER AND STATION NUMBER

Stations are listed in a downstream direction along the main stream, and stations on tributaries are listed between stations on the main stream in the order in which those tributaries enter the main stream. Stations on tributaries entering above all mainstream stations are listed before the first mainstream station. Stations on tributaries to tributaries are listed in a similar manner. In the lists of gaging stations and water-quality stations in the front of this report the rank of tributaries is indicated by indentation, each indention representing one rank.

As an added means of identification, each gaging station, partial-record station, and water-quality station has been assigned a station number. These are in the same downstream order used in this report. In assigning station numbers, no distinction is made between partial-record stations and gaging stations; therefore, the station number for a partial-record station indicates downstream order position in a list made up of both types of stations. Water-quality stations located at or near gaging stations or partial-record stations have the same number as the gaging or partial-record station. Gaps are left in the series of numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete 8-digit number for each station, such as 05061500, includes the part number "05" and a 6-digit number. This number appears just to the left of the station name. In this report, the records are listed in downstream order by parts. The part number refers to an area whose boundaries coincide with certain natural drainage lines. All records for a drainage basin encompassing more than one State could be arranged in downstream order by assembling pages from the various State reports by station number to include all records in the basin.

NUMBERING SYSTEM FOR WELLS AND MISCELLANEOUS SITES

Miscellaneous downstream order station numbers are not assigned to wells and miscellaneous sites where only random water-quality samples or discharge measurements are taken.

The well and miscellaneous site numbering system of the U.S. Geological Survey is based on the grid system of latitude and longitude. The system provides the geographic location of the well or miscellaneous site and a unique number for each site. The number consists of 15 digits. The first 6 digits denote the degrees, minutes, and seconds of latitude, the next 7 digits denote degrees, minutes, and seconds of longitude, and the last 2 digits is a sequential number for wells within a 1-second grid. In the event that the latitude-longitude coordinates for a well and a miscellaneous site are the same, assign sequential numbers "01," "02," etc. as one would for wells. For example, the station number for a water-quality miscellaneous site with lat 44°47'33", long 093°12'09" would be 444733093120901.

EXPLANATION OF SURFACE WATER RECORDS

Collection and computation of data

The base data collected at gaging stations consist of records of stage and measurements of discharge of streams or canals, and stage, surface area, and contents of lakes or reservoirs. In addition, observations of factors affecting the stage-discharge relation or the stage-capacity relation, weather records, and other information are used to supplement base data in determining the daily flow or volume of water in storage. Records of stage are obtained from direct readings on a non-recording gage or from a water-stage recorder that gives either a continuous graph of the fluctuations or a tape punched at 15-, 30-, or 60-minute intervals. Measurements of discharge are made with a current meter, using the general methods adopted by the Geological Survey on the basis of experience in stream gaging since 1888. These methods are described in standard textbooks, in Water-Supply Paper 888, and in U.S. Geological Survey Techniques of Water Resources Investigations, book 3, chapter A6. Surface areas of lakes or reservoirs are determined from instrument surveys using standard methods. The configuration of the reservoir bottom is determined by sounding at many points.

For stream-gaging stations, rating tables giving the discharge for any stage are prepared from stage-discharge relation curves. If extensions to the rating curves are necessary to express discharge greater than measured, they are made on the basis of indirect measurements of peak discharge (such as slope-area or contracted-opening measurements, computation of flow over dams or weirs), velocity-area studies, and logarithmic plotting. The daily mean discharge is computed from gage heights and rating tables, then the monthly and yearly mean discharge are computed from the daily figures. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is computed by the shifting-control method, in which correction factors based on individual discharge measurements and notes by engineers and observers are used in applying the gage heights to the rating tables. If the stage-discharge relation for a station is temporarily changed by the presence of aquatic growth or debris on the control, the daily mean discharge is computed by what is basically the shifting-control method.

At some stream-gaging stations the stage-discharge relation is affected by backwater from reservoirs, tributary streams, or other sources. This necessitates the use of the slope method in which the slope or fall in a reach of the stream is a factor in computing discharge. The slope or fall is obtained by means of an auxiliary gage set at some distance from the base gage. At some stations the stage-discharge relation is affected by changing stage; at these stations the rate of change in stage is used as a factor in computing discharge.

At some stream-gaging stations the stage-discharge relation is affected by ice in the winter, and it becomes impossible to compute the discharge in the usual manner. Discharge for the periods of ice effect is computed on the basis of the gage-height record and occasional winter discharge measurements, consideration being given to the available information on temperature and precipitation, notes by gage observers and hydrologists, and comparable records of discharge for other stations in the same or nearby basins.

For a lake or reservoir station, capacity tables giving the contents for any stage are prepared from stage-area relation curves defined by surveys. The application of the stage to the capacity table gives the contents, from which the daily, monthly, or yearly change in contents is computed.

If the stage-capacity curve is subject to changes because of deposition of sediment in the reservoir, periodic resurveys of the reservoir are necessary to define new stage-capacity curves. During the period between reservoir surveys the computed contents may be increasingly in error due to the gradual accumulation of sediment.

For some gaging stations there are periods when no gage-height record is obtained or the recorded gage height is so faulty that it cannot be used to compute daily discharge or contents. This happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, the float is frozen in the well, or for various other reasons. For such periods the daily discharges are estimated on the basis of recorded range in stage, adjoining good record, discharge measurements, weather records, and comparison with other station records from the same or nearby basins. Lakewise daily contents may be estimated on the basis of operator's log, adjoining good record, inflow-outflow studies, and other information.

The data in this report generally comprise a description of the station and tabulations of daily and monthly figures. For gaging stations on streams or canals a table showing the daily discharge and monthly and yearly discharge is given. For gaging stations on lakes and reservoirs a monthly summary table of stage and contents or a table showing the daily contents is given. Tables of daily mean gage heights are included for some streamflow stations and for some reservoir stations. Records are published for the water year, which begins on October 1 and ends on September 30. A calendar for the current water year is shown on the reverse side of the front cover to facilitate finding the day of the week for any date.

The description of the gaging stations gives the location, drainage area, period of record, type and history of gages, average discharge, extremes of discharge or contents, and general remarks. The location of the gaging station and the drainage area are obtained from the most accurate maps available. River mileage, given under "LOCATION" for some stations, is that determined and used by the Corps of Engineers or other agencies. Periods for which there are published records for the present station or for stations generally equivalent to the present one are given under "PERIOD OF RECORD." The type of gage currently in use, the datum of the present gage above mean sea level, and a condensed history of the types, locations, and datum of previous gages used during the period of record are given under "GAGE." In references to datum of gage, the phrase "mean sea level" denotes "Sea Level Datum of 1929" as used by the Topographic Division of the Geological Survey unless otherwise qualified. The average discharge for the number of years indicated is given under "AVERAGE DISCHARGE"; it is not given for stations having fewer than 5 complete years of record or for stations where changes in water development during the period of record cause the figure to have little significance. In addition, the median of yearly mean discharges is given for stream-gaging stations having 10 or more complete years of record if the median differs from the average by more than 10 percent. The maximum discharge if there is little or no regulation (or minimum contents) and the minimum gage height if it is significant are given under "EXTREMES." The minimum daily discharge is given if there is extensive regulation (also the minimum discharge and gage height if they are abnormally low). In the first paragraph headed "Current year," the data given are for the complete current water year unless otherwise specified. In the second paragraph under "EXTREMES" headed "Period of record:" the data given are for the period of record given in PERIOD OF RECORD paragraph. Reliable information concerning major floods that occurred outside the period of record is given in the third or last paragraph under "EXTREMES." Unless otherwise qualified, the maximum discharge (or contents) corresponds to the crest stage obtained by use of a water-stage recorder (graphic or digital), a crest-stage gage, or a nonrecording gage read at the time of the crest. If the maximum gage height did not occur at the same time as the maximum discharge (or contents), it is given separately. Information pertaining to the accuracy of the discharge records, to conditions that affect the natural flow at the gaging station, and availability of Water Quality records, is given under "REMARKS"; for reservoir stations information on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir, is also under "REMARKS."

Previously published records of some stations have been found to be in error on the basis of data or information later obtained. Revisions of such records are usually published along with the current records in one of the annual or compilation reports. In order to make it easier to find such revised records, a paragraph headed "REVISIONS (WATER YEARS)" has been added to the description of all stations for which revised records have been published. Listed therein are all the reports in which revisions have been published, each followed by the water years for which figures are revised in that report. In listing the water years only one number is given; for instance, 1965 stands for the water year October 1, 1964, to September 30, 1965. If no daily, monthly, or annual figures of discharge were revised, that fact is brought out by notations after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the revised figure was first published is given. It should be noted that for all stations for which cubic feet per second per square mile and runoff in inches are published, a revision of the drainage area necessitates corresponding revision of all figures based on the drainage area. Revised figures of cubic feet per second per square mile and runoff in inches resulting from a revision of the drainage area only are usually not published in the annual series of reports.

Skeleton rating tables are published for stream-gaging stations where they serve a useful purpose and the dates of applicability can be easily identified.

Skeleton capacity tables are published for all reservoirs for which records of contents are published on a daily basis.

The daily table for stream-gaging stations gives the mean discharge for each day and is followed by monthly and yearly summaries. In the monthly summary below the daily table, the line headed "TOTAL" gives the sum of the daily figures. The line headed "MEAN" gives the average flow in cubic feet per second during the month. The lines headed "MAX" and "MIN" give the maximum and minimum daily discharges, respectively, for the month. Discharge for the month also may be expressed in cubic feet per second per square mile (line headed "CFSM"), or in inches (line headed "IN"), or in acre-feet (line headed "AC-FT"). Figures for cubic feet per second per square mile and runoff in inches are omitted if there is extensive regulation or diversion, if the drainage area includes large noncontributing areas, or if the average annual rainfall over the drainage basin is usually less than 20 inches.

In the yearly summary below the monthly summary, the figures following "MAX" are the maximum daily discharges for the calendar and water years; likewise, those following "MIN" are the minimum daily discharges.

Footnotes to the table of daily discharges are introduced by the word "NOTE." Footnotes are used to indicate periods for which the discharge is computed or estimated by special methods because of no gage-height record, backwater from various sources, or other unusual conditions. Periods of no gage-height record are indicated if the period is continuous for a month or more or includes the maximum discharge for the year. Periods of backwater from an unusual source, of indefinite stage-discharge relation, or of any other unusual condition at the gage site are indicated only if they are a month or more in length and the accuracy of the records is affected. Days on which the stage-discharge relation is affected by ice are not indicated. The methods used in computing discharge for various unusual conditions have been explained in preceding paragraphs.

Peak discharges and their times of occurrence and corresponding gage heights for many stations are listed below the yearly summary. All independent peaks above the selected base are given. The base discharge, which is given in parentheses, is selected so that an average of about three peaks a year can be presented. Peak discharges are not published for any canals, ditches, drains, or for any stream for which the peaks are subjected to substantial control by man. Time of day is expressed in 24-hour local standard time; for example, 12:30 a.m. is 0030, 1:30 p.m. is 1330.

For most gaging stations on lakes and reservoirs the data presented comprise a description of the station and a monthly summary table of stage and contents. For some reservoirs a table showing daily contents or stage is given. A skeleton table of capacity at given stages is published for all reservoirs for which records are published on a daily basis, but is not published for reservoirs for which only monthly data are given.

Data collected at partial-record stations and miscellaneous sites are given in three tables at the end of the surface-water records in this report. The first is a table of discharge measurements at low-flow partial-record stations, the second is a table of annual maximum stage and discharge at crest-stage stations, and the third is a table of discharge measurements at miscellaneous sites.

Accuracy of Data

The accuracy of discharge data depends primarily on (1) the stability of the stage-discharge relation, or if the control is unstable, the frequency of discharge measurements, and (2) the accuracy of observations of stage, measurements of discharge, and interpretation of records.

The station description under "REMARKS" states the degree of accuracy of the records. "Excellent" means that about 95 percent of the daily discharges is within 5 percent; "good" within 10 percent; and "fair" within 15 percent. "Poor" means that daily discharges have less than "fair" accuracy.

Figures of daily mean discharge in this report are shown to the nearest hundredth of a cubic foot per second for discharges of less than 1 cfs; to tenths between 1.0 and 10 cfs; to whole numbers between 10 and 1,000 cfs; and to 3 significant figures above 1,000 cfs. The number of significant figures used is based solely on the magnitude of the figure. The same rounding rules apply to discharge figures listed for partial-record stations and miscellaneous sites.

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff due to the effects of diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes or to other factors. For such stations, figures of cubic feet per second per square mile and of runoff in inches are not published unless satisfactory adjustments can be made for diversions, for changes in contents of reservoirs, or for other changes incident to use and control. Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents, unless it is so stated. Even at those stations where adjustments are made, large errors in computed runoff may occur if adjustments or losses are large in comparison with the observed discharge.

Publications

In each water-supply paper entitled, "Surface Water Supply of the United States" there is a list of preceding water-supply papers containing streamflow information for the area covered by that report. In addition, there is a list of numbers of water-supply papers containing detailed information on major floods in the area. Records for stations in Minnesota for the period October 1960 to September 1965 are in Water-Supply Papers 1911, 1913, 1914, 1915, and 1917.

Two series of summary reports entitled, "Compilation of Records of Surface Waters of the United States" have been published; the first series covers the entire period of record through September 1950 and the second series covers the period October 1950 to September 1960. These reports contain summaries of monthly and annual discharge and monthend storage for all previously published records as well as some records not contained in the annual series of water-supply papers. All records were reexamined and revised where warranted. Estimates of discharge were made to fill short gaps whenever practical. The yearly summary table for each gaging station lists the numbers of the water-supply papers in which daily records were published for that station. Records for stations in Minnesota are compiled in Water-Supply Papers 1307, 1308, and 1310 through September 1950, and in 1727, 1728, and 1730 for October 1950 to September 1960.

Special reports on major floods or droughts or of other hydrologic studies for the area have been issued in publications other than water-supply papers. Information relative to these reports may be obtained from the district office.

Other data available

More detailed information than that published for most of the gaging stations, such as discharge measurements, gage-height record, and rating tables, is on file in the district office. Many gaging-station records in Minnesota have been analyzed through 1968 to give several statistical summaries: (1) the number of days in each year that the daily discharge was between selected limits (duration tables); (2) the lowest mean discharge for selected numbers of consecutive days in each year; and (3) the highest mean discharge for selected numbers of consecutive days in each year.

WATER QUALITY RECORDS

Collection and examination of data

Water samples for analyses usually are collected at or near gaging stations. The discharge records at these stations are used in conjunction with the computations of the chemical constituents and sediment loads in this report.

Descriptive statements are given for water-quality stations located at or near streamflow stations. Given are location, drainage area, periods of record for the various water-quality data, extremes of pertinent data, and general remarks, in a format similar to that used for streamflow gaging stations. For ground-water stations, no descriptive statements are given; however, the well number, depth of well, date of sampling, and other pertinent data are given in the table containing the chemical analyses of the ground water.

Data on the quality of surface water were collected from designated sampling sites (map on page 225) at predetermined intervals such as one daily, weekly, monthly, or less frequently. Whereas at some sites it was necessary to continuously record data on a punched paper tape at 15-, 30-, or 60-minute intervals. Data on quality of ground water were collected at 25 wells throughout the State.

Water-quality information is presented for chemical quality, biological, microbiological, water temperature, and fluvial sediment. Chemical quality includes concentrations of individual dissolved constituents and certain properties or characteristics such as hardness, sodium adsorption ratio, specific conductance, and pH. The biological information includes qualitative and quantitative analyses of plankton, bottom organisms, and particulate inorganic and amorphous matter present. Microbiological information includes quantitative identification of certain bacteriological indicator organisms. Water-temperature data represent once-daily observations except for stations where a continuous temperature recorder furnished information from which daily minimums and maximums are obtained. Fluvial-sediment information is given for suspended-sediment discharges and concentrations and for particle-size distribution of suspended sediment and bed material.

Prior to the 1968 water year, data for chemical constituents and concentrations of suspended sediment were reported in parts per million (ppm) and water temperatures were reported in degrees Fahrenheit (°F). In October 1967, the U.S. Geological Survey began reporting data for chemical constituents and concentrations of suspended sediment in milligrams per litre (mg/l) and water temperatures in degrees Celsius (centigrade, °C). In waters with a density of 1.000 g/ml (grams per millilitre), parts per million and milligrams per litre can be considered equal. In waters with a density greater than 1.000 g/ml, values in parts per million should be multiplied by the density to convert to milligrams per litre. Temperatures reported to degrees Celsius may be converted to degrees Fahrenheit by using the table 3 below.

In October 1968, the Geological Survey began reporting many of the chemical constituents as well as the minor elements in micrograms per litre instead of milligrams per litre. (See "Definition of Terms," p. 3 and table for converting English Units to SI Units, p. 31.

Table 3.--Degrees Fahrenheit (°F) to degrees Celsius (°C)* (Temperature reported to nearest 0.5°C)

°F	°C	°F	°C	°F	°C	°F	°C	°F	°C
32	0.0	50	10.0	68	20.0	86	30.0	104	40.0
33	.5	51	10.5	69	20.5	87	30.5	105	40.5
34	1.0	52	11.0	70	21.0	88	31.0	106	41.0
35	1.5	53	11.5	71	21.5	89	31.5	107	41.5
36	2.0	54	12.0	72	22.0	90	32.0	108	42.0
37	3.0	55	13.0	73	23.0	91	33.0	109	43.0
38	3.5	56	13.5	74	23.5	92	33.5	110	43.5
39	4.0	57	14.0	75	24.0	93	34.0	111	44.0
40	4.5	58	14.5	76	24.5	94	34.5	112	44.5
41	5.0	59	15.0	77	25.0	95	35.0	113	45.0
42	5.5	60	15.5	78	25.5	96	35.5	114	45.5
43	6.0	61	16.0	79	26.0	97	36.0	115	46.0
44	6.5	62	16.5	80	26.5	98	36.5	116	46.5
45	7.0	63	17.0	81	27.0	99	37.0	117	47.0
46	8.0	64	18.0	82	28.0	100	38.0	118	48.0
47	8.5	65	18.5	83	28.5	101	38.5	119	48.5
48	9.0	66	19.0	84	29.0	102	39.0	120	49.0
49	9.5	67	19.5	85	29.5	103	39.5	121	49.5

*°C = 5/9 (°F - 32) or °F = 9/5 (°C) + 32.

Solutes

Most methods for collecting and analyzing water samples to determine the kinds and concentrations of solutes are described by Brown, Skougstad, and Fishman. The method for determining elemental constituents by emission spectrographic techniques is described by Barnett and Mallory. Analysis of pesticides, herbicides, and organic substances in water are described by Goerlitz and Lamar; Lamar, Goerlitz, and Law; and Goerlitz and Brown. The collection and analysis of aquatic, biological and microbiological samples are described by Slack and others.

One sample can define adequately the water quality at a given time if the mixture of solutes throughout the stream cross section is homogeneous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water discharge, depending on the source of material and the turbulence and mixing of the stream. Some streams must be sampled through several vertical sections to obtain a representative sample needed for an accurate mean concentration and for use in calculating load.

Chemical-quality data published in this report are considered to be the most representative values available for the stations listed. The values reported represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. In the rare case where an apparent inconsistency exists between the reported pH value and the relative abundance of carbon dioxide species (carbonate and bicarbonate), the inconsistency is the result of a slight uptake of carbon dioxide from the air by the sample between measurement of pH in the field and determination of carbonate and bicarbonate in the laboratory.

The daily chemical-quality data in this report generally represent equal-volume composites for 20 to 30-day periods; the composite periods are selected on the basis of specific conductance of the daily samples and fluctuation of water discharge.

For chemical-quality stations equipped with noncontinuous-digital monitors, the records consist of daily maximum, minimum, and mean values for each constituent measured and are based upon hourly punches beginning at 0100 hours and ending at 2400 hours for the day of record. More detailed records (hourly values) may be obtained from the U.S. Geological Survey district office at the address given on the back of the title page of this report.

Ground-water quality normally does not change significantly during short periods of time; infrequent sampling and analysis of ground water adequately define ground-water quality at a given site. Water samples from wells are analyzed individually.

Temperature

Water temperatures are measured at most of the water-quality stations. For daily stations, the water temperatures are taken about the same time each day when sample is collected. Large streams have a small diurnal temperature change while small, shallow streams may have a daily range of several degrees and may follow closely the changes in air temperature. Some streams may be affected by waste-heat discharges.

At stations where continuously recording thermographs are present, the records consist of maximum and minimum temperatures for each day and the monthly averages.

Sediment

Suspended-sediment concentrations are determined from samples collected by using depth-integrating samplers. Samples usually are obtained at several verticals in the cross section, or a single sample may be obtained at a fixed point and a coefficient applied to determine the mean concentration in the cross sections.

During periods of rapidly changing flow or rapidly changing concentration, samples may have been collected more frequently (twice daily or, in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration were computed by the subdivided day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the subdivided day method. For periods when no samples are collected, daily loads of suspended sediment are estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge.

At other stations, suspended-sediment samples are collected periodically at many verticals in the stream cross section. Although data collected periodically may represent conditions only at the time of observation, such data are useful in establishing seasonal relations between quality and streamflow in predicting long-term sediment-discharge characteristics of the stream.

In addition to the records of the quantities of suspended sediment, records of periodic measurements of the particle-size distribution of the suspended sediment and bed material are included.

Publications

The annual series of water-supply papers that contain information on quality of surface waters in Minnesota are listed below.

Water year	Parts 1-14	Parts 1-4	Parts 5-6	Water year	Parts 1-4	Parts 3-4	Parts 4-5	Parts 5-6	Part 6
1941	942	---	---	1956	1450	---	---	1451	---
1942	950	---	---	1957	1520	---	---	1521	---
1943	970	---	---	1958	1571	---	---	1572	---
1944	1022	---	---	1959	---	1642	---	1643	---
1945	1030	---	---	1960	---	1742	---	1743	---
1946	1050	---	---	1961	---	1882	---	1883	---
1947	1102	---	---	1962	---	1942	---	1943	---
1948	---	1132	1132	1963	---	1948	---	1949	---
1949	---	1162	1162	1964	---	1955	---	1956	---
1950	---	1186	1187	1965	---	1962	---	1963	---
1951	---	1197	1198	1966	---	1992	---	1993	---
1952	---	1250	1251	1967	---	2012	---	2013	---
1953	---	1290	1291	1968	---	---	2094	---	2095
1954	---	1350	1351	1969	---	---	2144	---	2145
1955	---	1400	1401	1970	---	---	2154	---	2155

EXPLANATION OF GROUND-WATER LEVEL RECORDS

Collection of the data

Only ground-water level data from a basic national network of observation wells are published herein. These water-level measurements are intended to provide a sampling and historical record of water-level changes in the nation's most important aquifers.

Each well is identified by means of (1) a 15-digit number that is based on the grid system of latitude and longitude, and (2) a local number that is provided for continuity with older reports and for other use as dictated by local needs.

Measurements are made in many types of wells under varying conditions, but the methods of measurement are standardized to the extent possible. The equipment and measuring techniques used at each observation well insure that measurements at each well are of consistent accuracy and reliability.

Water-level measurements in this report are given in feet with reference to either mean sea level (msl) or land-surface datum (lsd). Mean sea level is the datum plane on which the national network of precise levels is based; land-surface datum is a datum plane that is approximately at land surface at each well. If known, the altitude of the land-surface datum above mean sea level is given in the well description. The height of the measuring point (MP) above or below land-surface datum is given in each well description. Water levels in wells equipped with recording gages are reported for every fifth day and the end of each month (eom).

Water levels are reported to as many significant figures as can be justified by the local conditions. For example, in a measurement of a depth to water of several hundred feet, the error of determining the absolute value of the total depth to water may be a few tenths of a foot, whereas the error in determining the net change of water level between successive measurements may be only a hundredth or a few hundredths of a foot. For lesser depths to water, the accuracy is greater. Accordingly, most measurements are reported to a hundredth of a foot, but some are given only to a tenth of a foot or a larger unit.

Publications

Publication of ground-water level data for the United States in Water-Supply Papers was begun by the Geological Survey in 1935. From 1935 through 1939, a single Water-Supply Paper for each year covering the entire nation was issued (Water-Supply Papers 777, 817, 840, 845, and 886). From 1940 through 1974, separate Water-Supply Papers were issued for 6 sections of the United States. Water-level data for Minnesota are in the Water-Supply Papers listed below, each report containing one or more calendar years (January-December) of data. Data in this report are for the 12-month water year ending September 30.

Calendar year	WSP No.	Calendar year	WSP No.	Calendar year	WSP No.	Calendar year	WSP No.
1935	777	1942	946	1949	1158	1956	1456
1936	817	1943	988	1950	1167	1957-61	1781
1937	840	1944	1018	1951	1193	1962-66	1976
1938	845	1945	1025	1952	1223	1967-71	2090
1939	886	1946	1073	1953	1267		
1940	908	1947	1098	1954	1323		
1941	938	1948	1128	1955	1406		

Information about reports and other data on ground water in Minnesota may be obtained from the district office, at the address given on the back of the title page.

HYDROLOGIC CONDITIONS

Annual runoff during the 1975 water year was generally a little above normal. The southwestern part of the State was the exception with below normal runoff for the year and every month except May. The southeastern part of the State experienced normal to above normal runoff for every month except March. Runoff for the rest of the State followed a pattern of below normal October through March and above normal April through September.

Heavy precipitation June 28-30 and July 1-2 in the northwestern corner of the State caused severe flooding in the Buffalo and Wild Rice River basins in Minnesota. Minor flooding occurred on most of the Minnesota tributaries to the Red River of the North.

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____ 1957, The development and calibration of visual-accumulation tube: Rept. 11.

____ 1957, Some fundamentals of particle size analysis: Rept. 12.

____ 1959, Federal inter-agency sedimentation instruments and reports: Rept. AA.

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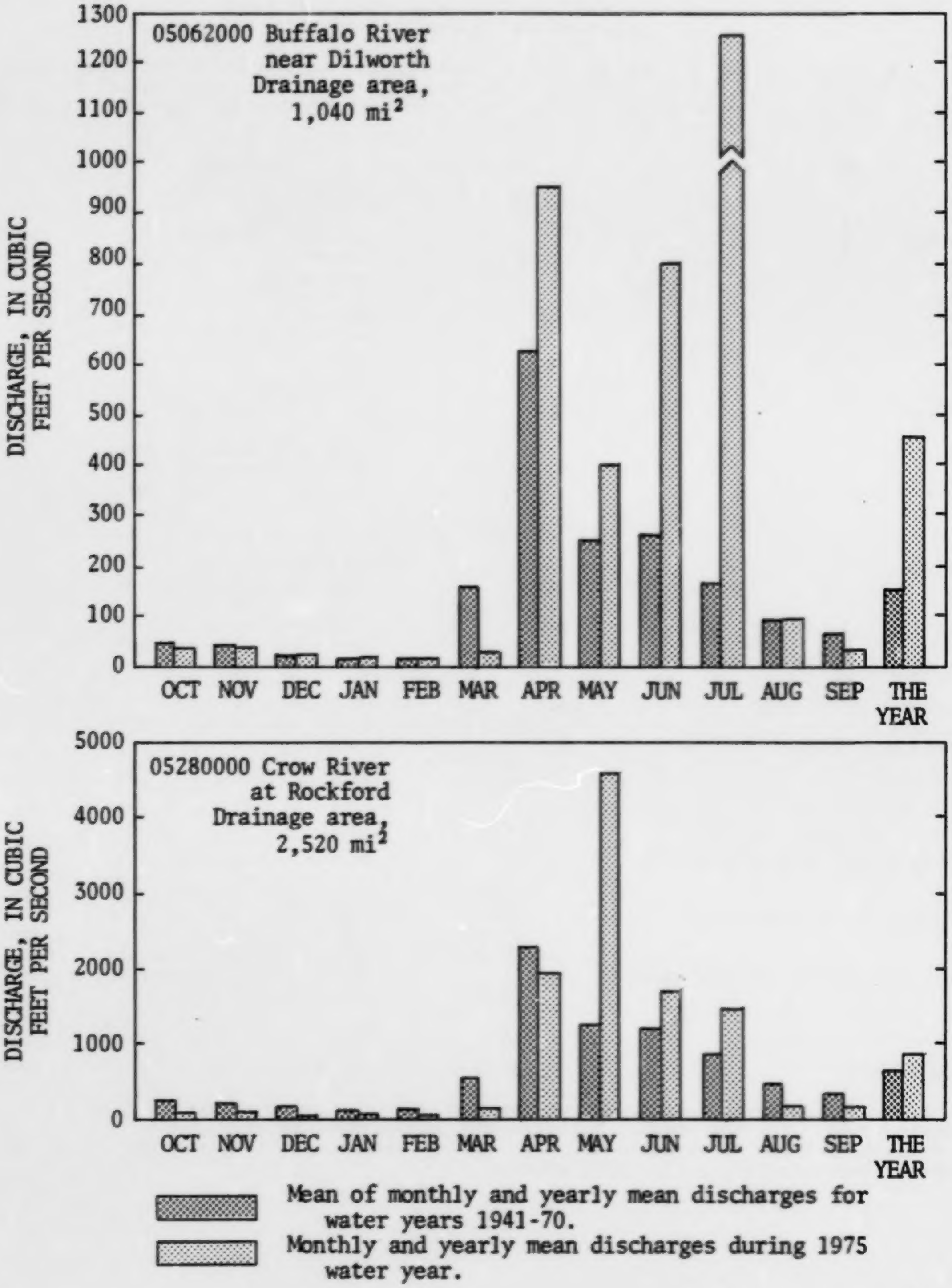
Table 4.--Factors for converting English units to International System (SI) units

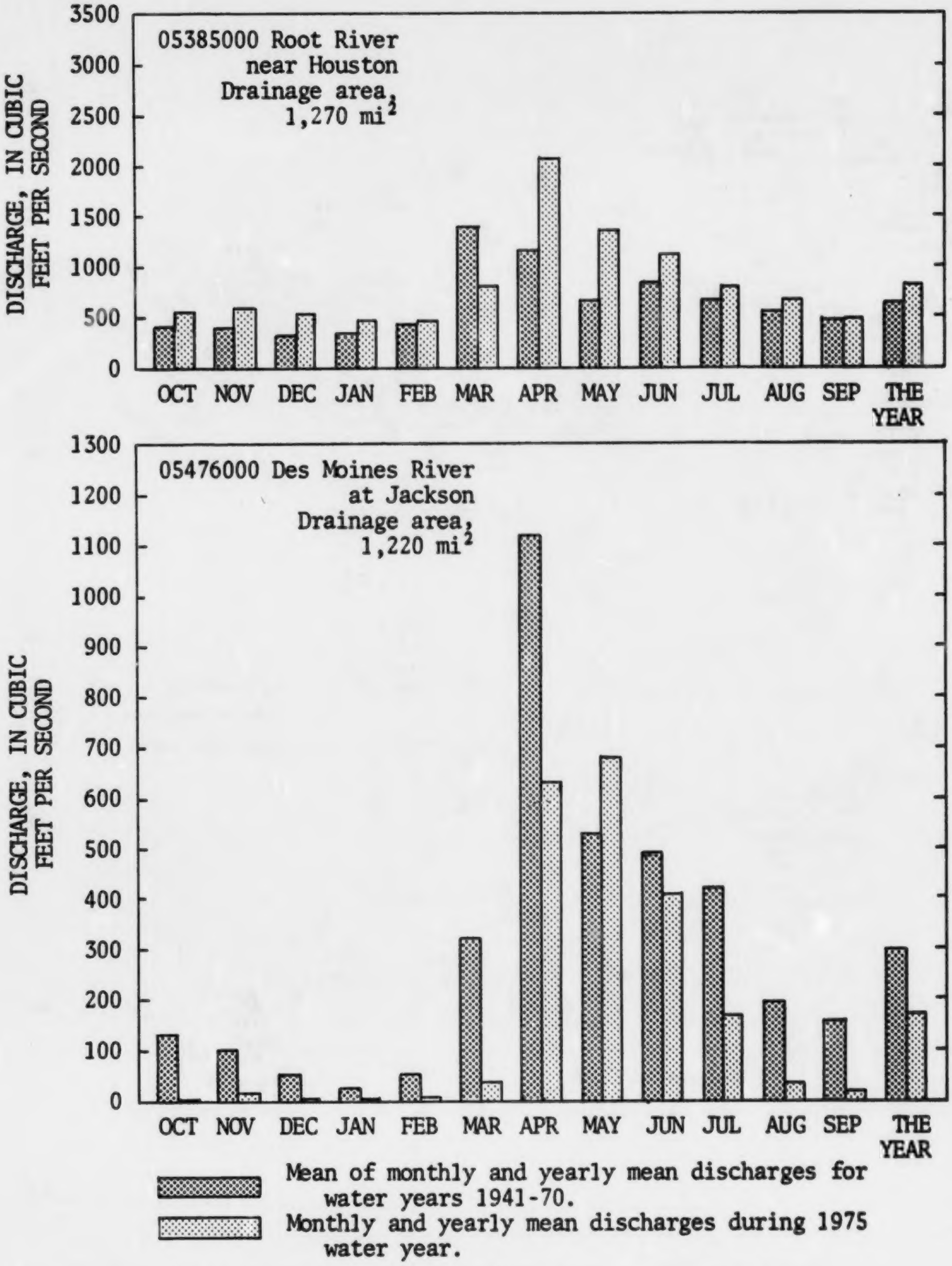
The following factors may be used to convert the English units published herein to the International System of Units (SI). Subsequent reports will contain both the English and SI unit equivalents in the station manuscript descriptions until such time that all data will be published in SI units.

Multiply English units	By	To obtain SI units
	Length	
inches (in)	25.4	millimetres (mm)
	.0254	metres (m)
feet (ft)	.3048	metres (m)
yards (yd)	.9144	metres (m)
rods	5.0292	metres (m)
miles (mi)	1.609	kilometres (km)
	Area	
acres	4047	square metres (m^2)
	.4047	*hectares (ha)
	.4047	square hectometre (hm^2)
	.004047	square kilometres (km^2)
square miles (mi^2)	2.590	square kilometres (km^2)
	Volume	
gallons (gal)	3.785	**litres (l)
	3.785	cubic decimetres (dm^3)
	3.785×10^{-3}	cubic metres (m^3)
million gallons (10^6 gal)	3785	cubic metres (m^3)
	3.785×10^{-3}	cubic hectometres (hm^3)
cubic feet (ft^3)	28.32	cubic decimetres (dm^3)
	.02832	cubic metres (m^3)
cfs-day (ft^3/s-day)	2447	cubic metres (m^3)
	2.447×10^{-3}	cubic hectometres (hm^3)
acre-feet (acre-ft)	1233	cubic metres (m^3)
	1.233×10^{-3}	cubic hectometres (hm^3)
	1.233×10^{-6}	cubic kilometres (km^3)
	Flow	
cubic feet per second (ft^3/s)	28.32	litres per second (l/s)
	28.32	cubic decimetres per second (dm^3/s)
	.02832	cubic metres per second (m^3/s)
gallons per minute (gpm)	.06309	litres per second (l/s)
	.06309	cubic decimetres per second (dm^3/s)
	6.309×10^{-5}	cubic metres per second (m^3/s)
million gallons per day (mgd)	43.81	cubic decimetres per second (dm^3/s)
	.04381	cubic metres per second (m^3/s)
	Mass	
ton (short)	.9072	tonne (t)

*The unit hectare is approved for use with the International System (SI) for a limited time. See NBS Special Bulletin 330, p. 15, 1972 edition.

**The unit litre is accepted for use with the International System (SI). See NBS Special Bulletin 330, p. 13, 1972 edition.


1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
DISCHARGE, IN CUBIC FEET PER SECOND
05062000 Buffalo River near Dilworth Drainage area, 1,040 mi²
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
THE YEAR
5000
4000
3000
2000
1000
0
DISCHARGE, IN CUBIC FEET PER SECOND
05280000 Crow River at Rockford Drainage area, 2,520 mi²
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
THE YEAR
Mean of monthly and yearly mean discharges for water years 1941-70.
Monthly and yearly mean discharges during 1975 water year.


05385000 Root River
near Houston
Drainage area,
1,270 mi^2
DISCHARGE, IN CUBIC FEET PER SECOND
3500
3000
2500
2000
1500
1000
500
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
THE YEAR
05476000 Des Moines River
at Jackson
Drainage area,
1,220 mi^2
DISCHARGE, IN CUBIC FEET PER SECOND
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
THE YEAR
▨ Mean of monthly and yearly mean discharges for water years 1941-70.
▨ Monthly and yearly mean discharges during 1975 water year.

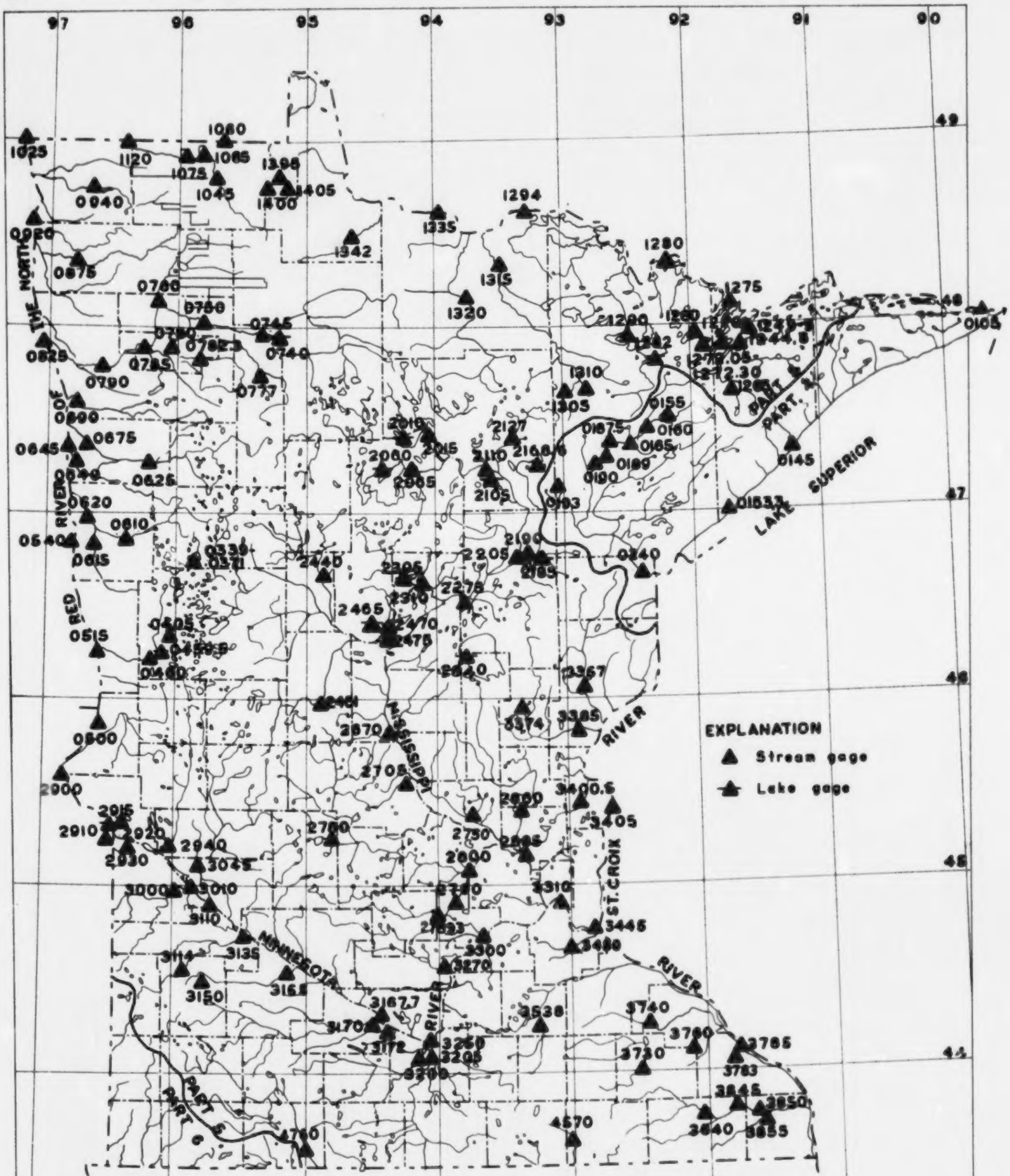

97
96
95
94
93
92
91
90
49
48
47
46
45
44
43
RED RIVER OF THE NORTH
MISSISSIPPI RIVER
MINNESOTA RIVER
ST. CROIX RIVER
LAKE SUPERIOR
PART 4
PART 5
PART 6
EXPLANATION
Stream gage
Lake gage
1025
1120
1075
1060
1065
1045
1398
1400
1405
0940
0920
0875
1335
1294
1342
1280
1315
1320
1275
0105
0780
0750
0745
0740
0825
0790
0785
0777
1290
1242
1260
1310
1305
0800
0155
0160
0165
0675
0645
0640
0625
2010
2015
2060
2065
2127
2110
2105
0190
0145
0620
0610
0540
0615
2440
2205
2190
2165
0340
2305
2310
2275
2465
2470
2475
0515
2640
3367
2481
3385
2670
3374
0500
2708
2900
3405
2800
2915
2910
2920
2930
2940
3045
2700
2750
2885
2800
3000
3010
3110
3310
3445
3480
3114
3135
3150
3165
3300
3270
3538
3740
3167.7
3170
3172
3250
3205
3200
3760
3785
3730
3783
3845
3850
3640
3855
4570
4750

Figure 2.-- Map showing location of lake and stream gaging stations.

35

SECTION 1. SURFACE WATER RECORDS

04010500 Pigeon River at Middle Falls, near Grand Portage, Minn.

(International gaging station)

LOCATION.--Lat 48°00'44", long 89°36'58", in NE¼ sec.24, T.64 N., R.6 E., Cook County, on right bank 400 ft (122 m) upstream from Middle Falls, 2.5 mi (4.0 km) upstream from Grand Portage Port of Entry, 3.5 mi (5.6 km) upstream from mouth, and 4.7 mi (7.6 km) northeast of village of Grand Portage.

DRAINAGE AREA.--600 mi² (1,554 km²).

PERIOD OF RECORD.--June to October 1921, April to November 1922, March 1923 to current year. Published as "at International Bridge" April 1924 to September 1940; as "below International Bridge" October 1940 to September 1965. Monthly discharge only for some periods, published in WSP 1307.

GAGE.--Water-stage recorder. Datum of gage is 789.58 ft (240.664 m) above mean sea level, datum of 1929. Prior to Sept. 30, 1940, nonrecording gage at International Bridge, 5.8 mi (9.3 km) upstream at datum 100.24 ft (30.553 m) higher.

AVERAGE DISCHARGE.--52 years (1923-75), 505 ft³/s (14.30 m³/s), 11.43 in/yr (290 mm/yr).

EXTREMES.--Current year: Maximum discharge, 3,550 ft³/s (101 m³/s) Apr. 27 (gage height, 6.63 ft or 2.021 m); maximum gage height, 7.09 ft (2.161 m) Apr. 26 (backwater from ice); minimum discharge, 70 ft³/s (1.98 m³/s) Sept. 18; minimum gage height, 0.50 ft (0.152 m) Sept. 2, 3.

Period of record: Maximum discharge, 11,000 ft³/s (312 m³/s) May 5, 1934 (gage height, 7.6 ft or 2.32 m, site and datum then in use), from rating curve extended above 7,000 ft³/s (198 m³/s); minimum, 27 ft³/s (0.76 m³/s) Nov. 4, 1945 (gage height, -0.08 ft or -0.024 m).

REMARKS.--Records good except those for winter periods, which are fair.

COOPERATION.--This station is one of the international gaging stations maintained by the United States under agreement with Canada.

REVISIONS (WATER YEARS).--WSP 744: 1927-28. WSP 804: 1934(M). WSP 974: Drainage area. WSP 1337: 1924(M), 1925, 1926-28(M), 1931(M), 1938(M), 1941(M), 1945-46(M), 1947, 1948(M), 1950(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	322	515	375	350	390	205	235	3050	608	430	208	76
2	325	841	371	350	380	200	230	3080	572	491	206	73
3	311	942	363	350	370	200	225	2960	544	474	206	77
4	294	886	380	350	360	195	220	2830	507	436	211	75
5	343	786	390	345	350	190	215	2790	500	393	211	74
6	408	627	400	340	335	190	210	2800	497	360	211	74
7	440	536	400	340	320	190	210	2940	507	348	194	115
8	436	480	400	340	310	190	210	2950	481	329	172	114
9	436	447	400	340	300	190	210	2820	449	312	163	109
10	427	428	400	340	295	190	210	2610	424	299	159	112
11	408	637	395	500	290	190	210	2410	409	283	152	109
12	396	797	390	650	280	190	215	2200	427	267	148	101
13	387	696	390	640	275	190	220	2010	474	247	140	94
14	402	559	385	600	265	190	230	1810	524	242	128	89
15	504	505	385	550	260	190	250	1660	541	239	125	84
16	514	511	380	520	255	190	290	1540	507	234	125	79
17	500	501	380	500	250	190	345	1430	481	229	109	74
18	481	470	375	490	245	200	415	1340	440	226	96	74
19	448	431	375	470	240	210	510	1280	402	226	86	83
20	421	405	370	460	240	210	690	1210	449	231	82	91
21	406	408	370	450	235	210	980	1200	652	237	89	113
22	390	407	370	420	230	210	1650	1150	724	237	86	128
23	378	407	365	420	225	200	2050	1070	655	231	83	133
24	363	395	365	410	220	190	2450	992	572	242	85	127
25	346	390	360	410	220	190	2800	921	504	244	89	114
26	340	390	360	410	215	190	3100	875	455	247	89	106
27	325	385	360	410	210	200	3300	810	430	242	87	98
28	311	385	355	410	210	210	3330	769	399	234	88	92
29	305	380	355	400	---	220	3090	711	381	231	86	86
30	337	380	350	400	---	230	2910	666	399	229	82	83
31	354	---	350	400	---	235	---	640	---	218	78	---
TOTAL	12058	15935	11664	13365	7775	6175	31210	55524	14914	8888	4074	2857
MEAN	389	531	376	431	278	199	1040	1791	497	287	131	95.2
MAX	514	942	400	650	390	235	3330	3080	724	491	211	133
MIN	294	380	350	340	210	190	210	640	381	218	78	73
CFSM	.65	.89	.63	.72	.46	.33	1.73	2.99	.83	.48	.22	.16
IN.	.75	.99	.72	.83	.48	.38	1.94	3.44	.92	.55	.25	.18

CAL YR 1974 TOTAL 220162 MEAN 603 MAX 4240 MIN 118 CFSM 1.01 IN 13.65
WTR YR 1975 TOTAL 184439 MEAN 505 MAX 3330 MIN 73 CFSM .84 IN .00

PEAK DISCHARGE (BASE, 3,000 FT³/S).--Apr. 27 (2230) 3,550 ft³/s (6.63 ft).

04014500 Baptism River near Beaver Bay, Minn.

LOCATION.--Lat 47°20'15", long 91°12'00", in SE¼NE¼ sec.15, T.56 N., R.7 W., Lake County, on right bank 30 ft (9 m) upstream from bridge on U.S. Highway 61, 0.2 mi (0.3 km) upstream from mouth, 4 mi (6 km) northeast of Silver Bay, and 7 mi (11 km) northeast of village of Beaver Bay.

DRAINAGE AREA.--140 mi² (363 km²).

PERIOD OF RECORD.--October 1927 to current year. Monthly discharge only for some periods, published in WSP 1307.

GAGE.--Water-stage recorder. Datum of gage is 609.97 ft (185.919 m) above mean sea level (Corps of Engineers bench mark). Prior to Oct. 5, 1934, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--48 years, 168 ft³/s (4.758 m³/s), 16.30 in/yr (414 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,570 ft³/s (72.8 m³/s) May 3 (gage height, 4.16 ft or 1.268 m); minimum, 5.3 ft³/s (0.15 m³/s) Aug. 19, 20 (gage height, 0.40 ft or 0.122 m).
Period of record: Maximum discharge recorded, 9,350 ft³/s (265 m³/s) Aug. 9, 1939 (gage height, 8.11 ft or 2.472 m), from rating curve extended above 4,000 ft³/s (113 m³/s); maximum gage height, 11.06 ft (3.371 m) Apr. 12, 1965 (from floodmark, backwater from ice); minimum daily discharge, 0.4 ft³/s (0.011 m³/s) Jan. 5, 6, 1940.

REMARKS.--Records fair. Records of water-quality data for the current year are published in Section 2 of this report.

REVISIONS (WATER YEARS).--WSP 894: 1939. WSP 1337: 1933-34(M), 1935.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	205	41	31	39	30	43	1690	82	54	17	17
2	26	289	43	31	38	30	42	1800	74	146	16	14
3	26	232	46	30	37	30	41	2190	64	160	14	21
4	25	182	38	30	36	29	40	1940	58	115	13	20
5	46	147	35	30	36	29	40	1530	117	84	12	21
6	61	125	35	30	35	29	39	1740	138	256	11	22
7	81	107	32	30	34	28	39	1950	124	258	9.5	51
8	83	93	31	31	34	28	39	1910	104	205	8.7	80
9	81	85	30	31	34	28	40	1630	86	157	8.2	79
10	74	78	30	33	33	28	41	1330	77	115	11	65
11	68	103	27	80	33	28	48	1010	78	91	10	53
12	62	109	28	200	32	28	56	807	116	79	9.9	42
13	56	95	30	165	32	27	62	622	176	62	11	36
14	57	81	30	135	31	27	76	557	188	50	8.8	31
15	73	75	32	119	31	27	96	507	179	41	8.0	27
16	74	72	36	104	31	27	120	415	185	34	9.3	24
17	64	85	39	92	30	29	150	339	157	29	7.8	22
18	58	61	39	82	30	38	200	307	126	26	6.4	27
19	54	66	38	73	30	50	280	277	99	23	5.7	72
20	50	67	37	66	31	54	422	261	113	20	6.3	101
21	47	61	36	59	31	54	458	244	184	18	18	106
22	47	57	36	55	32	52	634	218	259	16	14	98
23	45	54	35	52	32	50	1000	193	198	17	18	182
24	41	53	35	50	32	48	1240	171	152	27	23	186
25	38	51	34	48	33	49	1450	155	115	37	27	145
26	35	49	34	46	32	48	1430	132	90	40	25	117
27	34	47	33	45	31	47	1380	110	72	39	24	94
28	33	46	32	44	31	47	1590	128	56	33	23	78
29	38	44	32	42	---	47	1500	122	52	28	22	64
30	70	46	32	41	---	46	1740	107	54	24	20	59
31	77	---	31	40	---	45	---	93	---	20	18	---
TOTAL	1650	2865	1067	1945	921	1157	14336	24485	3573	2304	435.6	1954
MEAN	53.2	95.5	34.4	62.7	32.9	37.3	478	790	119	74.3	14.1	65.1
MAX	83	289	46	200	39	54	1740	2190	259	258	27	186
MIN	25	44	27	30	30	27	39	93	52	16	5.7	14
CFSM	.38	.68	.25	.45	.24	.27	3.41	5.64	.85	.53	.10	.47
IN.	.44	.76	.28	.52	.24	.31	3.81	6.51	.95	.61	.12	.52

CAL YR 1974 TOTAL 56601.0 MEAN 155 MAX 1550 MIN 18 CFSM 1.11 IN 15.04
WTR YR 1975 TOTAL 56692.6 MEAN 155 MAX 2190 MIN 5.7 CFSM 1.11 IN 15.06

PEAK DISCHARGE (BASE, 1,300 FT³/S).--May 3 (2330) 2,570 ft³/s (4.16 ft); May 7 (2300) 2,310 ft³/s (4.03 ft).

04015330 Knife River near Two Harbors, Minn.

LOCATION.--Lat 46°56'49", long 91°47'32", in SW¼NW¼ sec. 31, T.52 N., R.11 W., Lake County, on right bank 600 ft (183 m) downstream from bridge on U.S. Highway 61, 0.5 mi (0.8 km) upstream from bridge on County Highway 102, in town of Knife River, 0.8 mi (1.3 km) upstream from Lake Superior, and 7.8 mi (12.6 km) southwest of Two Harbors.

DRAINAGE AREA.--85.6 mi² (222 km²).

PERIOD OF RECORD.--Occasional low-flow measurements, water years 1970-71, July 1974 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 640 ft (195 m), from topographic map.

EXTREMES.--July to September 1974: Maximum discharge during period, 229 ft³/s (6.49 m³/s) Aug. 3 (gage height, 3.94 ft or 1.201 m); minimum, 3.4 ft³/s (0.096 m³/s) July 30, 31 (gage height, 2.46 ft or 0.750 m).
Water year 1975: Maximum discharge, 2,860 ft³/s (81.0 m³/s) Apr. 23 (gage height, 7.52 ft or 2.292 m); minimum, 1.4 ft³/s (0.040 m³/s) Aug. 16 (gage height, 2.38 ft or 0.725 m).

REMARKS.--Records fair.

DISCHARGE, IN CUBIC FEET PER SECOND, JULY TO SEPTEMBER 1974
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1										15	4.0	12
2										15	48	10
3										15	171	8.2
4										19	85	6.8
5										16	41	5.9
6										13	23	5.5
7										11	15	5.3
8										10	10	5.5
9										9.0	7.8	6.1
10										7.8	6.8	6.4
11										7.6	13	6.5
12										7.0	24	6.9
13										6.8	19	7.0
14										7.3	13	7.2
15										7.8	14	6.3
16										7.5	12	5.8
17										9.9	9.4	5.0
18										17	7.3	4.5
19										9.4	5.8	4.4
20										7.2	5.3	4.4
21										10	5.2	4.2
22										33	5.3	4.2
23										19	5.8	4.1
24										12	5.2	4.6
25										10	5.4	5.0
26										8.1	42	5.6
27										6.4	49	5.9
28										5.0	25	5.7
29										4.3	17	5.6
30										3.7	14	6.4
31										3.7	13	---
TOTAL										333.5	721.3	181.0
MEAN										10.8	23.3	6.03
MAX										33	171	12
MIN										3.7	4.0	4.1
CFSM										.13	.27	.07
IN.										.14	.31	.08

PEAK DISCHARGE (BASE) 800 FT³/S).--No peak above base.

04015330 Knife River near Two Harbors, Minn.--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.0	32	11	12	19	12	34	1080	21	20	2.7	4.0
2	7.0	60	10	12	19	12	34	965	19	41	2.8	3.2
3	6.7	50	10	12	18	11	33	937	17	36	3.3	2.7
4	6.7	41	9.8	12	17	11	32	790	15	27	3.3	2.3
5	7.4	41	9.5	12	16	11	31	617	28	60	4.9	2.5
6	12	33	9.0	12	16	10	30	565	41	100	3.5	2.9
7	17	29	8.0	13	15	10	30	511	32	80	2.5	5.3
8	21	24	5.6	13	14	10	29	452	24	62	2.1	11
9	18	22	4.6	13	14	9.8	30	306	18	46	2.0	7.4
10	23	20	4.2	15	14	9.8	30	218	16	35	2.1	5.0
11	17	30	4.3	30	13	9.8	33	168	18	29	2.0	4.0
12	13	31	5.2	100	13	9.6	42	131	106	23	1.8	3.6
13	11	26	7.4	84	13	9.4	54	101	191	18	1.7	3.2
14	10	22	10	70	13	9.1	74	91	126	15	1.5	3.2
15	9.7	21	11	60	13	9.0	90	105	89	12	1.7	2.9
16	10	21	12	54	13	9.4	130	87	105	9.5	1.5	2.7
17	11	26	13	48	13	9.5	200	67	67	8.0	1.7	2.5
18	11	19	13	42	13	9.7	300	55	54	7.0	2.1	7.8
19	11	18	13	39	13	11	430	49	45	6.1	2.3	59
20	10	18	13	36	13	13	600	48	49	5.4	1.8	36
21	9.8	18	13	33	13	18	800	47	103	4.3	5.0	29
22	9.4	18	13	31	12	32	970	47	83	4.3	5.0	23
23	9.4	17	13	29	12	48	2090	42	54	4.4	4.2	21
24	9.4	17	12	28	12	46	1920	93	34	9.3	5.0	25
25	9.0	16	12	27	12	44	1860	75	25	9.1	7.8	19
26	8.2	15	12	26	12	42	1600	52	18	8.5	6.7	15
27	8.2	14	12	25	12	40	1470	39	17	8.5	3.6	12
28	7.9	13	12	23	12	38	1790	33	15	6.2	2.9	11
29	7.9	12	12	22	---	37	1990	31	15	4.5	4.8	10
30	8.4	12	12	21	---	36	1360	27	15	3.8	5.0	9.3
31	9.0	---	12	20	---	35	---	23	---	3.2	4.2	---
TOTAL	336.1	736	318.6	974	389	622.1	18116	7852	1460	706.1	101.5	345.5
MEAN	10.8	24.5	10.3	31.4	13.9	20.1	604	253	48.7	22.8	3.27	11.5
MAX	23	60	13	100	19	48	2090	1080	191	100	7.8	59
MIN	6.7	12	4.2	12	12	9.0	29	23	15	3.2	1.5	2.3
CFSM	.13	.29	.12	.37	.16	.23	7.06	2.96	.57	.27	.04	.13
IN.	.15	.32	.14	.42	.17	.27	7.87	3.41	.63	.31	.04	.15

WTR YR 1975 TOTAL 31956.9 MEAN 87.6 MAX 2090 MIN 1.5 CFSM 1.02 IN 13.89

PEAK DISCHARGE (BASE, 800 FT^3/S).--Apr. 23 (1215) 2,860 ft^3/s (7.52 ft); Apr. 28 (1845) 2,640 ft^3/s (7.30 ft).

04015500 Second Creek near Aurora, Minn.

LOCATION.--Lat 47°31'25", long 92°11'35", in SW¼ sec.12, T.58 N., R.15 W., St. Louis County, on left bank 0.1 mi (0.2 km) downstream from First Creek, 0.4 mi (0.6 km) upstream from mouth, and 2.1 mi (3.4 km) east of Aurora.

DRAINAGE AREA.--26.3 mi² (68.1 km²).

PERIOD OF RECORD.--March 1955 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,410.36 ft (429.878 m) above mean sea level, datum of 1929 (levels by Erie Mining Company).

AVERAGE DISCHARGE.--20 years, 22.9 ft³/s (0.649 m³/s).

EXTREMES.--Current year: Maximum discharge, 98 ft³/s (2.78 m³/s) Apr. 18 (gage height, 4.65 ft or 1.417 m); maximum gage height, 5.47 ft (1.667 m) Apr. 11 (backwater from ice); minimum discharge, 14 ft³/s (0.40 m³/s) Oct. 2, 3, Aug. 19, 20.

Period of record: Maximum discharge, 254 ft³/s (7.19 m³/s) Apr. 22, 1961 (gage height, 5.63 ft or 1.716 m); maximum gage height, 5.75 ft (1.753 m) Mar. 28, 1957 (backwater from ice); minimum daily discharge, 1.5 ft³/s (0.042 m³/s) Jan. 26 to Feb. 4, 1963; minimum gage height, 3.10 ft (0.945 m) Feb. 2, 3, 4, 1963.

REMARKS.--Records good except those for winter period and those for period of no gage-height record, which are fair. Natural flow of stream affected by continually changing iron-mining activities that include (1) diversions for iron-ore processing, (2) regulation of tailing ponds, and (3) mine pit dewatering. The amount of water pumped to streams from pit dewatering generally exceeds diversions for ore processing.

REVISIONS (WATER YEARS).--WRD Minn. 1971: 1957, 1961.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	54	22	25	20	17	20	64	22	25	25	22
2	16	65	21	25	20	17	19	61	22	70	23	21
3	16	57	21	25	20	16	19	55	23	60	22	30
4	19	50	30	24	20	16	18	50	23	55	25	30
5	23	45	34	24	20	16	18	47	33	55	24	32
6	25	41	33	24	19	16	19	43	31	70	23	33
7	30	36	31	24	19	16	20	39	30	90	24	37
8	28	32	28	24	19	16	21	39	28	75	23	32
9	28	26	23	24	19	16	23	34	27	65	22	31
10	29	27	19	23	19	16	31	31	26	58	21	29
11	25	26	16	23	19	16	40	28	30	55	18	23
12	20	25	20	23	19	16	50	25	90	47	17	18
13	27	23	30	23	18	16	60	22	80	47	20	19
14	33	26	35	23	18	16	68	25	72	43	19	19
15	33	29	35	23	18	16	77	33	65	40	18	18
16	32	29	34	23	18	16	88	28	57	37	18	16
17	29	29	32	23	18	16	91	24	52	34	18	18
18	27	29	30	22	18	17	93	27	48	33	18	27
19	27	29	24	22	18	19	86	25	44	32	14	32
20	25	31	23	22	18	22	77	21	40	32	16	31
21	23	31	27	22	18	25	69	20	37	32	20	32
22	24	38	32	22	17	27	67	19	34	30	22	29
23	24	46	33	21	17	27	75	22	32	29	23	27
24	19	40	32	21	17	26	73	23	30	31	27	26
25	25	33	31	21	17	25	70	21	28	30	32	24
26	38	27	29	21	17	24	70	19	27	33	26	23
27	34	23	27	21	17	23	64	18	26	35	29	22
28	30	25	26	21	17	22	60	21	26	33	31	21
29	48	25	26	20	---	22	62	22	25	30	26	20
30	46	23	25	20	---	21	66	20	25	28	24	22
31	44	---	25	20	---	20	---	20	---	25	23	---
TOTAL	867	1022	854	699	514	594	1614	944	1133	1357	689	764
MEAN	28.0	34.1	27.5	22.5	18.4	19.2	53.8	30.5	37.8	43.8	22.2	25.5
MAX	48	65	35	25	20	27	93	64	90	90	32	37
MIN	16	23	16	20	17	16	18	18	22	25	14	16

CAL YR 1974 TOTAL 9711.3 MEAN 26.6 MAX 94 MIN 7.2
WTR YR 1975 TOTAL 11051.0 MEAN 30.3 MAX 93 MIN 14

PEAK DISCHARGE (BASE, 60 FT³/S)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
11-2	0830	4.40	68	6-12	Unknown	Unknown	about 95
4-18	1100	4.65	98	7-6	Unknown	Unknown	about 95

NOTE.--No gage-height record June 8 to July 10.

04016000 Partridge River near Aurora, Minn.

LOCATION.--Lat 47°31'02", long 92°11'24", in SE¼SW¼ sec.12, T.58 N., R.15 W., St. Louis County, on right bank at upstream side of highway bridge, 1,000 ft (305 m) downstream from Second Creek, 2.5 mi (4.0 km) east of Aurora, and 2.8 mi (4.5 km) upstream from mouth.

DRAINAGE AREA.--156 mi² (404 km²).

PERIOD OF RECORD.--August 1942 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,402.30 ft (427.421 m) above mean sea level, datum of 1929. Aug. 5, 1942, to Aug. 25, 1944, nonrecording gage, and Aug. 26, 1944, to July 1, 1956, water-stage recorder at site 45 ft (14 m) downstream at same datum.

AVERAGE DISCHARGE (adjusted for storage and diversion).-- 33 years, 129 ft³/s (3.653 m³/s), 11.23 in/yr (285 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,110 ft³/s (31.4 m³/s) Apr. 28 (gage height, 5.33 ft or 1.625 m); minimum daily, 17 ft³/s (0.48 m³/s) Mar. 8.

Period of record: Maximum discharge, 3,230 ft³/s (91.5 m³/s) May 10, 1950 (gage height, 7.86 ft or 2.396 m); minimum, 2.2 ft³/s (0.062 m³/s) Jan. 30, 31, 1961; minimum gage height, 0.88 ft (0.268 m) Mar. 2, 1963.

REMARKS.--Records good except those for winter periods, which are fair. Flow regulated at times by storage in off-channel Partridge Reservoir, formerly known as Whitewater Lake. Reservoir formed from lake by levees around marsh areas and natural outlet. Available capacity, 20,000 acre-ft (24.7 hm³) between elevations 1,410 ft (430 m), natural lake level, and 1,440 ft (439 m). Storage began Apr. 9, 1955. Storage in reservoir obtained from Colby Lake during periods of high flow; release from storage returned to Colby Lake to maintain lake elevation during diversion for iron-ore processing. Diversion began Feb. 7, 1956. Some seepage losses from reservoir bypass station. Flow also affected by mining activities in Second Creek basin (see sta 04015500).

REVISIONS (WATER YEARS).--WSP 974: 1942. WSP 1307: 1943(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	104	52	30	25	28	36	930	75	98	54	47
2	31	112	49	28	25	31	36	864	74	174	51	47
3	30	108	49	31	25	33	37	679	73	208	49	59
4	33	98	52	29	25	32	36	612	72	261	54	57
5	38	87	54	29	24	29	37	647	86	288	51	60
6	41	85	53	29	25	23	37	622	85	285	49	61
7	47	77	49	28	25	19	41	564	94	265	47	69
8	46	79	42	29	25	17	44	508	107	347	45	68
9	47	72	44	29	26	21	45	461	104	297	41	61
10	50	66	38	28	26	27	48	360	107	262	39	62
11	49	69	38	28	25	28	68	344	101	251	37	54
12	45	66	36	28	25	27	77	284	217	140	35	50
13	55	61	42	30	25	26	88	250	398	188	36	52
14	59	61	40	28	25	26	109	227	649	146	33	50
15	56	66	46	27	24	23	125	230	825	127	29	48
16	55	65	44	26	23	20	146	221	771	112	27	46
17	51	60	41	28	24	18	150	208	760	97	26	49
18	51	57	42	29	23	20	157	206	705	86	25	56
19	52	56	38	30	23	24	146	195	579	76	21	63
20	55	63	38	31	23	27	142	183	452	67	22	59
21	56	66	39	32	24	33	132	170	350	65	27	58
22	62	73	41	31	24	40	142	158	287	65	28	58
23	69	80	40	30	24	42	175	151	232	68	30	60
24	56	75	38	29	24	38	247	140	202	68	34	63
25	55	70	38	28	25	30	392	122	176	68	40	63
26	68	61	36	27	26	33	824	105	150	69	35	53
27	66	56	31	27	26	34	1070	94	125	70	39	54
28	61	58	29	26	27	29	1100	90	108	67	42	54
29	88	57	30	26	---	29	1050	84	103	64	41	52
30	87	54	27	28	---	30	1010	78	99	58	42	51
31	83	---	34	25	---	33	---	73	---	57	44	---
TOTAL	1,676	2,162	1,270	884	691	870	7,747	9,860	8,167	4,496	1,173	1,684
MEAN	54.1	72.1	41.0	28.5	24.7	28.1	258	318	272	145	37.8	56.1
MAX	88	112	54	32	27	42	1,100	930	825	347	54	69
MIN	30	54	27	25	23	17	36	73	72	57	21	47
/	+3.11	+45.1	+5.11	+11.5	+7.10	+11.3	+110	+38.4	+37.1	+17.0	-2.15	+6.84
MEAN ≠	57.2	117	46.1	40.0	31.8	39.4	368	356	309	162	35.6	62.9
CFSM ≠	0.37	0.75	0.30	0.26	0.20	0.25	2.36	2.28	1.98	1.04	0.23	0.40
IN. ≠	0.42	0.84	0.34	0.30	0.21	0.29	2.63	2.63	2.21	1.20	0.26	0.45

CAL YR TOTAL 37,597 MEAN 103 MAX 608 MIN 20 MEAN ≠ 120 CFSM ≠ 0.77 IN. ≠ 10.47
WTR YR TOTAL 40,680 MEAN 111 MAX 1,100 MIN 17 MEAN ≠ 136 CFSM ≠ 0.87 IN. ≠ 11.79

/ Change in contents in Partridge Reservoir and diversion to iron-ore processing plant, equivalent in cubic feet per second; furnished by Erie Mining Co.

≠ Adjusted for change in contents and diversion.

04016500 St. Louis River near Aurora, Minn.

LOCATION.--Lat 47°29'30", long 92°14'20", in SW¼ sec.22, T.58 N., R.15 W., St. Louis County, on left bank at upstream side of highway bridge, 0.8 mi (1.3 km) downstream from Partridge River and 1.5 mi (2.4 km) south of Aurora.

DRAINAGE AREA.--312 mi² (808 km²).

PERIOD OF RECORD.--August 1942 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,371.24 ft (417.954 m) above mean sea level, datum of 1929. Prior to Aug. 26, 1944, nonrecording gage at same site and datum.

AVERAGE DISCHARGE (adjusted for storage and diversion).--33 years, 249 ft³/s (7.052 m³/s), 10.84 in/yr (275 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,590 ft³/s (45.0 m³/s) Apr. 30 (gage height, 4.51 ft or 1.375 m); minimum daily, 37 ft³/s (1.05 m³/s) Aug. 19, 20.
Period of record: Maximum discharge, 5,380 ft³/s (152 m³/s) May 14, 1950 (gage height, 8.37 ft or 2.551 m); minimum, 4.0 ft³/s (0.11 m³/s) Oct. 2, 3, 1948 (gage height, 0.30 ft or 0.091 m).

REMARKS.--Records good except those for winter period, which are fair. Flow regulated at times by storage in off-channel Partridge Reservoir, formerly known as Whitewater Lake. Reservoir formed from lake by levees around marsh areas and natural outlet. Available capacity 20,000 acre-ft (24.7 hm³) between elevations 1,410 ft (430 m), natural lake level, and 1,440 ft (439 m). Storage in reservoir obtained from Colby Lake during periods of high flow; release from storage returned to Colby Lake to maintain lake elevation during diversion for iron-ore processing. Diversion began Feb. 7, 1956. Some seepage losses from reservoir enter above station. Flow also affected by mining activities in Second Creek basin (see sta 04015500).

REVISIONS (WATER YEARS).--WSP 1337: 1950.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	54	160	91	55	51	53	72	1550	185	289	119	86
2	50	184	85	55	51	54	73	1510	174	477	116	64
3	47	183	84	55	51	54	75	1370	169	526	109	84
4	51	187	87	55	51	52	76	1310	163	546	122	78
5	62	177	91	56	50	50	77	1360	193	540	114	79
6	63	175	88	56	50	48	77	1330	198	555	105	80
7	72	165	83	56	50	47	78	1260	201	538	97	94
8	71	166	72	56	50	45	80	1170	212	656	91	86
9	71	159	71	56	50	46	85	1070	210	637	84	82
10	77	151	70	56	50	48	88	976	207	582	76	82
11	78	154	69	57	49	52	90	887	204	521	71	76
12	72	155	69	60	50	53	100	795	436	460	66	68
13	79	149	72	61	50	53	120	720	717	418	66	69
14	90	147	79	60	50	52	150	673	989	378	60	69
15	91	159	82	58	49	50	200	651	1110	344	53	66
16	88	164	82	60	49	50	250	604	1070	303	47	65
17	84	156	76	61	50	50	294	558	1020	268	45	68
18	86	146	72	62	50	52	336	527	967	238	41	70
19	88	142	67	64	50	55	346	481	849	222	37	80
20	94	144	66	65	50	58	371	446	751	202	37	80
21	96	146	68	66	49	62	388	416	657	188	44	82
22	103	148	70	63	49	66	451	376	590	178	43	80
23	110	156	71	61	49	69	627	355	519	176	47	84
24	102	151	72	59	49	69	787	328	470	171	52	85
25	97	148	69	57	49	68	917	293	426	164	63	86
26	111	143	65	56	49	66	1240	261	380	164	56	76
27	112	133	62	54	50	65	1490	232	342	160	54	78
28	108	122	59	53	51	66	1530	221	308	151	63	79
29	140	111	56	53	---	67	1540	209	295	143	59	76
30	137	100	54	52	---	69	1580	196	286	136	59	77
31	133	---	54	51	---	70	---	187	---	126	62	---
TOTAL	2717	4581	2256	1789	1396	1759	13588	22322	14298	10457	2158	2329
MEAN	87.6	153	72.8	57.7	49.9	56.7	453	720	477	337	69.6	77.6
MAX	140	187	91	66	51	70	1580	1550	1110	656	122	94
MIN	47	100	54	51	49	45	72	187	163	126	37	64
(/)	+3.11	+45.1	+5.11	+11.5	+7.10	+11.3	+110	+38.4	+37.1	+17.0	-2.15	+6.84
MEAN ≠	90.7	198	77.9	69.2	57.0	68.0	563	758	514	354	67.4	84.4
CFSM ≠	.29	.63	.25	.22	.18	.22	1.80	2.43	1.65	1.13	.22	.27
IN. ≠	.34	.71	.29	.26	.19	.25	2.01	2.80	1.84	1.31	.25	.30

CAL YR TOTAL 80,688 MEAN 221 MAX 1,150 MIN 35 MEAN ≠ 238 CFSM ≠ .76 IN. ≠ 10.37
WTR YR TOTAL 79,650 MEAN 218 MAX 1,580 MIN 37 MEAN ≠ 242 CFSM ≠ .78 IN. ≠ 10.54

/ Change in contents in Partridge Reservoir and diversion to iron-ore processing plant, equivalent in cubic feet per second; furnished by Erie Mining Co.

≠ Adjusted for change in contents and diversion.

04018750 St. Louis River at Forbes, Minn.

LOCATION.--Lat 47°21'48", long 92°35'56", in NE¼SE¼ sec.3, T.56 N., R.18 W., St. Louis County, on right bank at downstream side of highway bridge, 0.5 mi (0.8 km) downstream from Eveleth Taconite Company dam, 0.6 mi (1.0 km) south of Forbes, 1.8 mi (2.9 km) upstream from Elbow Creek.

PERIOD OF RECORD.--August 1964 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,293.11 ft (394.140 m) above mean sea level, datum of 1929. Prior to Oct. 28, 1964, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--11 years, 585 ft³/s (16.57 m³/s).

EXTREMES.--Current year: Maximum discharge, 3,950 ft³/s (112 m³/s) May 1 (gage height, 14.28 ft or 4.353 m); minimum daily, 38 ft³/s (1.08 m³/s) Jan. 11; minimum gage height, 5.33 ft (1.625 m) Aug. 13, 27, 28.

Period of record: Maximum discharge, 5,610 ft³/s (159 m³/s) Apr. 16, 1971 (gage height, 16.20 ft or 4.938 m, result of release of storage behind ice jam at dam 0.5 mi or 0.8 km upstream); maximum daily discharge, 5,170 ft³/s (146 m³/s) Apr. 18, 1969; maximum gage height, 16.27 ft (4.959 m) Apr. 15, 1971 (backwater from ice); minimum daily discharge, 25 ft³/s (0.71 m³/s) Mar. 6, 1973; minimum gage height, 5.14 ft (1.567 m) Nov. 26, 1972.

REMARKS.--Records good except those for the winter periods, which are fair. Natural flow of stream affected by continually changing iron-mining activities that include diversions for iron-ore processing, regulation of storage reservoirs and tailing ponds, and mine pit dewatering. There is some regulation at medium and low flows by Eveleth Taconite Company dam 0.5 mi (0.8 km) upstream.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	132	202	231	140	128	118	160	3940	551	791	213	208
2	126	382	220	140	128	117	162	3830	401	1290	152	210
3	122	455	208	139	128	116	164	3800	466	1650	172	214
4	112	458	200	139	128	114	165	3670	456	1520	237	234
5	121	460	193	139	128	113	165	3400	484	1370	246	230
6	137	456	191	139	126	113	165	3310	337	1400	210	221
7	99	407	190	139	126	112	165	3160	522	1370	198	241
8	92	490	189	200	126	112	165	2990	522	1090	184	257
9	158	515	184	132	126	112	165	2790	508	1390	175	254
10	170	424	182	72	126	110	165	2560	498	1300	166	245
11	164	414	181	38	126	111	170	2330	490	1180	155	244
12	167	401	180	66	43	112	175	2070	757	1070	144	243
13	165	384	178	200	92	114	180	1870	1320	949	103	235
14	181	367	176	170	122	115	200	1730	1610	713	113	223
15	196	327	174	125	122	116	270	1700	1770	780	135	215
16	195	324	172	150	122	118	350	1610	1930	717	127	207
17	194	330	171	140	122	119	500	1480	2030	625	121	200
18	190	363	169	136	122	120	800	1410	1970	357	112	206
19	189	334	168	134	122	122	1030	1280	1880	512	114	229
20	191	320	167	133	122	125	1300	1230	1790	480	128	249
21	193	301	166	132	120	126	1550	1170	1710	344	107	242
22	131	294	165	131	120	128	1900	1100	1620	411	118	229
23	163	301	164	130	120	130	2400	873	1120	250	143	140
24	219	278	161	130	120	134	2830	987	1290	370	145	201
25	126	278	163	130	53	138	3010	941	1150	243	226	236
26	190	277	180	130	110	140	3190	846	1020	354	115	248
27	233	274	167	130	120	148	3360	742	907	344	98	248
28	234	269	157	130	118	152	3580	694	794	231	42	246
29	242	257	150	129	---	155	3760	661	731	397	151	255
30	268	246	144	129	---	158	3900	607	742	250	193	245
31	278	---	141	129	---	160	---	585	---	222	199	---
TOTAL	5309	10588	5482	4101	3266	3878	36096	59366	31376	23970	4742	6855
MEAN	171	353	177	132	117	125	1203	1915	1046	773	153	229
MAX	278	515	231	200	128	160	3900	3940	2030	1650	246	257
MIN	92	202	141	38	43	110	160	585	337	222	42	140

CAL YR 1974 TOTAL 186045 MEAN 510 MAX 2580 MIN 30
WTR YR 1975 TOTAL 195029 MEAN 534 MAX 3940 MIN 38

04018900 East Two River near Iron Junction, Minn.

LOCATION.--Lat 47°24'04", long 92°39'52", in NW¼NW¼ sec.29, T.57 N., R.18 W., St. Louis County, on right bank 30 ft (9 m) downstream from bridge on State Highway 37 and 2.2 mi (3.5 km) southwest of Iron Junction.

DRAINAGE AREA.--40.0 mi² (103.6 km²).

PERIOD OF RECORD.--June 1966 to current year. Occasional low-flow measurements, water years 1957-62.

GAGE.--Water-stage recorder. Altitude of gage is 1,335 ft (407 m), from topographic map.

AVERAGE DISCHARGE.--9 years, 35.4 ft³/s (1.003 m³/s).

EXTREMES.--Current year: Maximum discharge, 405 ft³/s (11.5 m³/s) Apr. 16 (gage height, 9.53 ft or 2.905 m); maximum gage height, 9.55 ft (2.911 m) Apr. 15 (backwater from ice); minimum daily discharge, 6.5 ft³/s (0.184 m³/s) Feb. 28 to Mar. 12; minimum gage height, 2.79 ft (0.850 m) Aug. 14-16, 18, 19.

Period of record: Maximum discharge, 640 ft³/s (18.1 m³/s) Oct. 12, 1973 (gage height, 10.01 ft or 3.051 m); maximum gage height, 10.16 ft (3.097 m) Apr. 12, 1971 (backwater from ice); minimum daily discharge, 4.6 ft³/s (0.13 m³/s) Jan. 27-30, 1970.

REMARKS.--Records good except those for the winter periods, which are fair. Natural flow of stream affected by continually changing iron-mining activities that include mine pit dewatering and some regulation of tailing ponds.

COOPERATION.--Records collected and computed by U.S. Steel Corporation and reviewed by Geological Survey.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	50	14	12	11	6.5	11	182	18	54	13	15
2	13	80	14	12	11	6.5	11	168	15	219	13	15
3	12	65	13	12	11	6.5	11	145	15	267	13	20
4	12	55	13	12	11	6.5	11	133	15	200	14	26
5	14	48	13	12	11	6.5	12	100	21	185	14	25
6	16	36	13	12	11	6.5	12	127	22	170	13	24
7	17	30	13	12	11	6.5	12	109	21	130	14	25
8	17	26	13	12	10	6.5	13	89	20	97	14	26
9	16	24	12	12	10	6.5	15	73	18	71	12	23
10	15	22	12	12	10	6.5	18	62	18	56	12	21
11	14	20	12	12	10	6.5	25	50	18	46	12	19
12	14	19	12	12	9.8	6.5	50	48	50	39	12	17
13	14	18	12	12	9.5	6.6	100	40	80	34	12	15
14	13	16	12	12	9.4	6.8	180	41	95	24	12	14
15	14	18	12	12	9.2	7.0	300	52	95	25	12	13
16	13	16	12	12	9.1	7.5	390	49	90	22	12	13
17	13	17	12	12	8.7	8.0	356	45	80	20	12	12
18	13	17	12	12	8.5	9.0	310	39	64	18	12	14
19	13	17	12	12	8.2	10	274	46	51	18	12	15
20	13	17	12	12	8.0	10	255	42	57	17	12	19
21	13	17	11	12	7.8	11	222	36	58	16	15	22
22	12	17	11	12	7.6	12	199	42	49	18	17	23
23	12	16	11	12	7.4	12	211	37	42	16	17	22
24	12	15	11	12	7.2	12	201	36	37	16	20	20
25	12	15	11	12	7.0	12	188	32	41	16	20	18
26	12	15	11	12	6.8	12	181	28	39	16	19	16
27	12	14	11	12	6.7	12	173	24	36	18	18	15
28	12	14	11	12	6.5	11	170	22	33	16	17	14
29	18	14	11	12	---	11	175	21	40	15	16	13
30	24	14	11	12	---	11	185	19	50	14	16	13
31	22	---	11	11	---	11	---	18	---	14	16	---
TOTAL	441	764	371	371	254.5	269.9	4267	2015	1288	1888	443	547
MEAN	14.2	25.5	12.0	12.0	9.08	8.71	142	65.0	42.9	60.9	14.3	18.2
MAX	24	80	14	12	11	12	390	182	95	267	20	26
MIN	12	14	11	11	6.5	6.5	11	18	15	14	12	12

CAL YR 1974 TOTAL 12872.5 MEAN 35.3 MAX 500 MIN 6.0
WTR YR 1975 TOTAL 12919.2 MEAN 35.4 MAX 390 MIN 6.5

04019000 West Two River near Iron Junction, Minn.

LOCATION.--Lat 47°24'05", long 92°42'10", in SW¼SW¼ sec.24, T.57 N., R.19 W., St. Louis County, on right bank 40 ft (12 m) upstream from bridge on State Highway 37, 5 mi (8 km) southwest of Iron Junction, and 9.2 mi (14.8 km) upstream from St. Louis River.

DRAINAGE AREA.--68.4 mi² (177.2 km²).

PERIOD OF RECORD.--October 1953 to September 1962, October 1965 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,322.05 ft (402.96 m) above mean sea level, datum of 1929 (Minnesota Highway Department bench mark).

AVERAGE DISCHARGE.--19 years, 47.0 ft³/s (1.31 m³/s).

EXTREMES.--Current year: Maximum discharge, 708 ft³/s (20.1 m³/s) Apr. 19 (gage height, 9.03 ft or 2.752 m); minimum, 7.1 ft³/s (0.20 m³/s) Oct. 1-3, 24, 25, 26, 27 (gage height, 2.35 ft or 0.716 m).
Period of record: Maximum discharge, 916 ft³/s (25.9 m³/s) Apr. 17, 1954 (gage height, 9.85 ft or 3.002 m); minimum daily, 3.0 ft³/s (0.085 m³/s) Jan. 22 to Feb. 6, 1957; minimum gage height, 2.34 ft (0.713 m) Aug. 15, 17, 24-28, 1961, Oct. 31, Nov. 1, 1967.

REMARKS.--Records fair. Flow regulated at times by storage in West Two River Reservoir for taconite processing at U.S. Steel Mountain Iron Taconite Plant. The reservoir impounds water from the upper 27.9 mi² (72.3 km²) of the drainage area and has an available capacity of 8,500 acre-ft (10.5 hm³) between elevations 1,370 ft (418 m), natural inlet, and 1,395 ft (425 m), crest of spillway at outlet dam. Storage began July 28, 1966. Some seepage losses from reservoir enter above station.

COOPERATION.--Records for current year collected and computed by U.S. Steel Corporation and reviewed by Geological Survey.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.5	39	11	9.5	10	12	13	344	18	79	13	12
2	7.1	85	11	9.6	10	12	13	311	17	259	13	10
3	7.5	72	11	9.7	9.8	12	13	267	16	315	13	14
4	7.5	64	10	9.8	9.8	12	13	235	16	298	12	12
5	10	55	10	9.9	9.6	12	14	218	20	260	12	10
6	10	47	10	9.9	9.4	12	14	194	18	255	12	11
7	11	36	10	10	9.4	12	15	170	17	218	12	14
8	10	32	10	10	9.4	12	15	145	16	188	12	14
9	10	28	10	10	9.6	11	16	118	17	148	12	12
10	9.5	24	10	10	10	11	18	96	17	114	12	12
11	10	22	9.9	10	10	11	22	83	17	96	11	12
12	10	20	9.6	10	11	11	30	74	62	74	11	11
13	9.6	18	9.6	10	12	10	45	71	77	60	12	10
14	10	17	9.7	10	12	10	60	78	92	52	12	10
15	10	16	9.7	11	12	11	100	56	92	65	12	9.6
16	9.2	16	9.6	11	12	11	150	49	89	38	12	8.8
17	9.6	15	9.6	11	12	12	247	44	79	33	10	8.8
18	9.2	15	9.6	11	12	12	500	55	77	29	10	11
19	9.2	14	9.5	11	12	13	650	47	87	27	10	14
20	8.8	14	9.5	11	12	13	580	44	95	24	11	15
21	8.4	13	9.5	11	12	14	500	54	88	22	11	16
22	10	13	9.4	11	12	14	436	50	77	20	10	15
23	9.2	13	9.4	11	12	14	447	45	66	20	12	15
24	7.1	12	9.3	11	12	14	453	42	60	21	13	14
25	7.5	12	9.3	11	12	14	449	46	59	18	11	14
26	7.1	12	9.2	11	12	14	434	32	52	19	10	12
27	7.1	11	9.2	11	12	14	386	26	50	18	10	12
28	8.0	11	9.2	10	12	13	357	25	44	16	10	12
29	16	11	9.2	10	---	13	358	23	51	14	11	11
30	17	11	9.3	10	---	13	362	21	63	14	11	11
31	15	---	9.4	10	---	13	---	18	---	13	10	---
TOTAL	298.2	768	302.1	321.4	310.0	382	6710	3081	1547	2797	353	363.2
MEAN	9.62	25.6	9.75	10.4	11.1	12.3	224	99.4	51.6	90.2	11.4	12.1
MAX	17	85	11	11	12	14	650	344	95	315	13	16
MIN	7.1	11	9.2	9.5	9.4	10	13	18	16	13	10	8.8

CAL YR 1974 TOTAL 16298.4 MEAN 44.7 MAX 500 MIN 4.1
WTR YR 1975 TOTAL 17252.9 MEAN 47.2 MAX 650 MIN 7.1

04019300 West Swan River near Silica, Minn.

LOCATION.--Lat 47°17'36", long 93°02'30", in SW¼NW¼ sec.32, T.56 N., R.21 W., St. Louis County, on right bank 10 ft (3 m) upstream from pilings of dismantled bridge and railroad bed of Great Northern Railroad, 2 mi (3 km) northwest of Silica, 9 mi (14 km) southwest of Hibbing and 20 mi (32 km) upstream from confluence of East Swan and West Swan.

PERIOD OF RECORD.--April 1963 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,360 ft (415 m), from topographic map. Prior to Aug. 2, 1963, reference point at same site and datum.

AVERAGE DISCHARGE.--12 years, 11.1 ft³/s (0.314 m³/s).

EXTREMES.--Current year: Maximum discharge, 277 ft³/s (7.84 m³/s) Apr. 18 (gage height, 4.22 ft or 1.286 m); minimum, 0.03 ft³/s (0.001 m³/s) Aug. 11 (gage height, 0.64 ft or 0.195 m).
Period of record: Maximum discharge, 573 ft³/s (16.2 m³/s) Oct. 10, 1973 (gage height, 5.68 ft or 1.731 m); no flow for several days in 1969, 1970, 1972, 1973.

REMARKS.--Records good except those for winter periods, which are fair. Natural flow affected by extensive iron mining activities in headwaters of stream.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.5	14	1.1	.84	1.1	1.1	2.2	114	1.2	54	.21	1.5
2	2.2	36	1.0	.89	1.0	1.0	2.3	68	1.1	155	.46	1.2
3	2.2	39	1.0	.99	1.0	1.0	2.3	44	1.5	113	.32	2.8
4	2.1	30	1.0	.99	1.0	1.0	2.4	32	1.8	46	.57	2.9
5	3.1	19	.97	.94	1.0	1.0	2.4	31	4.2	20	.35	2.8
6	3.7	13	.90	.99	1.0	1.1	2.5	27	4.5	18	.43	2.3
7	4.8	10	.60	1.0	1.0	1.2	2.7	20	2.7	47	.32	2.8
8	4.9	8.4	.30	1.0	1.0	1.2	2.9	14	1.8	21	.15	3.1
9	3.9	7.7	.20	1.1	1.0	1.2	5.4	11	1.3	12	.07	3.2
10	3.5	6.9	.20	1.2	.99	1.2	4.0	8.4	1.5	8.2	.07	2.5
11	3.5	6.2	.20	1.2	.89	.99	6.0	7.1	1.9	5.4	.08	2.1
12	3.1	5.5	.30	1.0	.89	.89	8.5	5.7	17	3.9	.78	1.8
13	3.1	4.8	.50	.94	.84	.84	13	4.8	35	3.0	.68	1.3
14	3.5	4.1	.80	.89	.78	.78	20	6.6	30	2.2	.25	1.4
15	3.6	3.8	.90	.99	.78	.78	40	14	19	1.6	.18	1.2
16	3.5	3.4	.93	.99	.78	.78	100	13	13	1.2	.35	1.1
17	3.8	2.8	.96	1.1	.78	.84	205	9.5	8.6	.84	.21	1.1
18	3.5	2.6	.98	1.1	.78	1.1	262	12	5.7	.57	.21	1.7
19	3.1	2.7	.99	1.2	.78	1.3	243	11	4.6	.43	.19	2.8
20	2.1	3.2	.99	1.2	.78	1.6	210	8.6	8.0	.39	.21	4.4
21	.99	3.2	.99	1.2	.78	1.7	164	14	12	.28	.39	5.4
22	1.0	2.9	.99	1.2	.84	2.1	146	16	8.2	.25	.50	4.6
23	.99	2.7	.99	1.2	.84	2.1	215	10	5.2	.84	.99	3.8
24	.89	2.7	.99	1.2	.89	2.1	184	7.5	4.4	.84	1.9	2.8
25	.84	2.1	.99	1.2	.99	2.0	136	5.9	6.9	.62	1.9	2.3
26	.78	1.7	.99	1.2	1.0	2.0	108	5.2	8.0	.94	1.5	2.1
27	.78	1.4	.94	1.2	1.1	2.0	93	3.2	13	.73	1.1	1.7
28	1.3	1.3	.99	1.2	1.1	2.1	96	2.6	9.5	.43	.99	1.5
29	3.2	1.2	.99	1.2	---	2.1	173	2.0	26	.43	.89	1.5
30	5.2	1.1	.94	1.2	---	2.1	165	1.5	91	.28	.89	1.4
31	5.7	---	.99	1.2	---	2.2	---	1.3	---	.19	.73	---
TOTAL	87.37	243.4	25.61	33.75	25.71	43.40	2616.6	530.9	348.6	519.56	17.87	71.1
MEAN	2.82	8.11	.83	1.09	.92	1.40	87.2	17.1	11.6	16.8	.58	2.37
MAX	5.7	39	1.1	1.2	1.1	2.2	262	114	91	155	1.9	5.4
MIN	.78	1.1	.20	.84	.78	.78	2.2	1.3	1.1	.19	.07	1.1

CAL YR 1974 TOTAL 4855.62 MEAN 13.3 MAX 306 MIN .11
WTR YR 1975 TOTAL 4563.87 MEAN 12.5 MAX 262 MIN .07

04024000 St. Louis River at Scanlon, Minn.

LOCATION.--Lat 46°42'12", long 92°25'07", in NW¼ sec.30, T.49 N., R.16 W., Carlton County, on right bank 25 ft (8 m) downstream from lower bridge on U.S. Highway 61 at Scanlon, 0.6 mi (1.0 km) downstream from Minnesota Power and Light Co. powerplant, 3 mi (5 km) upstream from Thomson Reservoir, and 3.2 mi (5.1 km) upstream from Midway River.

DRAINAGE AREA.--3,430 mi² (8,880 km²), approximately.

PERIOD OF RECORD.--January 1908 to current year. Monthly discharge only for some periods published in WSP 1307. Published as "near Thomson" 1908-50.

GAGE.--Water-stage recorder. Datum of gage is 1,101.23 ft (335.655 m) above mean sea level, datum of 1929. Oct. 5, 1909, to Sept. 5, 1914, nonrecording gage 3 mi (5 km) downstream and 50 ft (15 m) below powerplant at datum about 420 ft (128 m) lower. Sept. 6, 1914, to Aug. 4, 1953, powerplant record at Thomson hydroelectric plant.

AVERAGE DISCHARGE (UNADJUSTED).--67 years, 2,294 ft³/s (64.97 m³/s), 9.08 in/yr (231 mm/yr).

EXTREMES.--Current year: Maximum discharge, 26,300 ft³/s (745 m³/s) Apr. 23 (gage height, 12.09 ft or 3.685 m); minimum, 662 ft³/s (18.7 m³/s) Mar. 26 (gage height, 2.71 ft or 0.826 m).
Period of record: Maximum discharge, 37,900 ft³/s (1,070 m³/s) May 9, 1950; maximum gage height, 15.8 ft (4.816 m) May 9, 1950, from Minnesota Highway Department (discharge uncertain); minimum discharge, 80 ft³/s (2.27 m³/s) Aug. 29, 1963; minimum daily, 109 ft³/s (3.09 m³/s) Feb. 7, 1924.

REMARKS.--Records good. Diurnal fluctuation caused by powerplant upstream. Flow regulated by Whiteface Reservoir and Boulder, Island, Rice and Fish Lakes (combined capacity, 332,160 acre-ft or 410 hm³). Water quality records for the current year are published in Section 2 of this report.

REVISIONS (WATER YEARS).--WSP: 1337: 1911-12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	998	1400	1230	1200	1260	1360	1590	21400	1590	3730	1230	1130
2	974	2050	1290	1150	1260	1360	1610	20300	1480	3890	978	1040
3	920	2870	1240	1160	1270	1370	1540	18500	1360	6870	1030	1010
4	1000	2950	1230	1180	1270	1400	1500	16500	1300	8740	1000	1060
5	1060	2630	1200	1200	1400	1380	1420	14900	1300	7880	886	933
6	1040	2370	1200	1250	1400	1430	1370	13500	1400	7090	1030	1060
7	1110	2200	1190	1260	1390	1450	1370	11900	1530	7600	1170	1120
8	1100	2000	1140	1260	1310	1440	1250	10600	1420	6630	1040	1090
9	1220	1780	864	1270	1440	1420	1290	9500	1270	5650	1120	989
10	1110	1900	979	1270	1440	1460	1310	8290	1180	4940	1170	1130
11	1050	1800	1090	1330	1430	1290	1300	7090	1270	4280	1090	1080
12	1100	1610	1120	1190	1420	1440	1270	6290	2040	3600	1040	1040
13	1100	1520	1170	941	1420	1470	1290	5430	5170	3160	1220	1000
14	1120	1490	1170	1160	1420	1370	1400	4920	7200	2710	1020	992
15	1090	1320	1210	1180	1390	1370	1800	4620	7210	2270	1060	972
16	1120	979	1200	1160	1380	1480	3500	4750	7830	1750	1000	997
17	1230	936	1190	1320	1360	1490	6000	4360	7770	1660	1050	961
18	1160	1110	1080	1280	1400	1640	9000	3940	7310	1500	1010	1030
19	1160	1310	1110	1310	1460	1660	12000	3780	6580	1310	1040	1150
20	1140	1480	1170	1360	1430	1590	14000	3430	6330	1150	1030	1060
21	1060	1260	1220	1360	1380	1640	16000	3320	6980	923	1030	1140
22	1130	1410	1220	1260	1400	1600	18700	3400	7450	1100	1040	1170
23	1060	1430	1220	1300	1420	1670	24000	3190	7040	1200	1040	1170
24	1030	1190	1210	1310	1370	1620	25000	3120	6070	1160	1070	1160
25	1000	1080	1240	1330	1470	1110	24400	2670	5080	1160	1200	1050
26	920	977	1220	1330	1480	1010	23000	2640	4240	1160	1060	997
27	1000	877	1170	1340	1440	1710	21500	2150	3350	1240	1100	1020
28	945	1000	1220	1290	1390	1610	20800	1840	2650	1070	1190	1030
29	919	1100	1240	1270	---	1620	20900	1730	2430	1190	1070	1140
30	1070	1230	1250	1270	---	1760	21400	1550	3370	1010	1020	1020
31	1100	---	1220	1270	---	1720	---	1730	---	997	920	---
TOTAL	33036	47259	36503	38761	38900	45880	281510	221340	121200	98640	32954	31741
MEAN	1066	1575	1178	1250	1389	1480	9384	7140	4040	3182	1063	1058
MAX	1230	2950	1290	1360	1480	1760	25000	21400	7830	8740	1230	1170
MIN	919	877	864	941	1260	1010	1250	1550	1180	923	886	933
(ƒ)	-517	+39	-610	-564	-768	-942	+1904	+2085	+428	+54	-782	-429
MEAN ≠	549	1614	568	686	621	538	11288	9225	4468	3236	281	629
CFSM ≠	0.16	0.47	0.17	0.20	0.18	0.16	3.29	2.69	1.30	0.94	0.08	0.18
IN ≠	0.18	0.53	0.19	0.23	0.19	0.18	3.67	3.10	1.45	1.09	0.09	0.20

CAL YR 1974 TOTAL 933121 MEAN 2556 MAX 14700 MIN 775 MEAN ≠ 2482 CFSM ≠ 0.72 IN. ≠ 9.82
WTR YR 1975 TOTAL 1027724 MEAN 2816 MAX 25000 MIN 864 MEAN ≠ 2808 CFSM ≠ 0.82 IN. ≠ 11.11

ƒ Change in contents, equivalent in cubic feet per second, in Whiteface Reservoir and Boulder, Island, Rice and Fish Lakes; records furnished by Minnesota Power and Light Co.
≠ Adjusted for change in contents.

05033900 Pelican River at Detroit Lakes, Minn.

LOCATION.--Lat 46°48'37", long 95°49'42", in SW¼ sec.35, T.139 N., R.41 W., Becker County, on left bank 60 ft upstream from culvert, 0.5 mile upstream from Detroit Lake, at Detroit Lakes.

PERIOD OF RECORD.--July 1968 to July 1971, December 1974 to June 1975 (discontinued).

GAGE.--Nonrecording gage read once daily. Datum of gage is 1334.73 ft above mean sea level, datum of 1929 (levels by Winston Larson, Detroit Lakes city engineer).

EXTREMES.--Maximum discharge during period December 1974 to June 1975, 144 ft³/s (4.08 m³/s) Apr. 18 (gage height, 2.64 ft or 0.805 m); minimum daily, 2.9 ft³/s (0.082 m³/s) Jan. 16-19.

Period of record: Maximum discharge, 167 cfs Apr. 10, 1969 (gage height, 5.31 ft, from floodmark); minimum daily, 0.3 cfs Sept. 28-30, 1969.

REMARKS.--Records fair.

COOPERATION.--Gage-height record furnished by Pelican River Watershed District.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1			5.1	5.6	5.6	7.0	14	88	30			
2			5.0	5.8	5.8	7.0	14	84	28			
3			4.9	6.4	5.9	7.0	13	81	25			
4			4.8	6.1	6.0	7.0	13	78	27			
5			4.8	5.8	6.1	7.0	13	77	25			
6			4.6	5.8	6.2	7.0	12	76	24			
7			4.6	6.1	6.2	7.0	13	69	22			
8			4.6	6.1	6.2	7.0	14	67	20			
9			4.4	6.4	6.2	7.1	14	64	21			
10			4.4	6.4	6.2	7.1	18	62	20			
11			4.6	5.6	6.2	7.1	21	57	21			
12			4.6	5.0	6.3	7.1	35	54	20			
13			4.6	4.6	6.3	7.1	45	54	19			
14			4.8	4.2	6.3	7.1	63	52	18			
15			5.4	3.7	6.3	7.2	80	51	18			
16			5.1	2.9	6.3	7.5	100	50	18			
17			5.1	2.9	6.3	8.0	131	48	19			
18			5.4	2.9	6.3	9.5	144	46	20			
19			5.4	2.9	6.3	10	140	44	52			
20			5.8	3.0	6.4	11	133	45	72			
21			5.8	3.1	6.5	12	126	46	88			
22			5.6	3.2	6.6	18	126	46	85			
23			5.6	3.2	6.8	19	126	44	79			
24			5.6	3.3	6.9	18	130	43	78			
25			5.8	3.4	7.0	17	131	42	73			
26			5.8	3.4	7.0	16	110	39	71			
27			5.8	3.6	7.0	15	104	38	69			
28			5.6	3.[illegible]	7.0	15	99	36	66			
29			5.6	4.[illegible]	---	15	97	34	95			
30			5.6	4.6	---	14	93	32	109			
31			5.4	5.2	---	14	---	31	---			
TOTAL			160.2	139.0	178.2	324.8	2172	1678	1328			
MEAN			5.17	4.48	6.36	10.5	72.4	54.1	44.3			
MAX			5.8	6.4	7.0	19	144	88	109			
MIN			4.4	2.9	5.6	7.0	12	31	18			
AC-FT			318	276	353	644	4310	3330	2630			

05034100 Pelican River at Detroit Lake Outlet near Detroit Lakes, Minn.

LOCATION.--Lat 46°47'22", long 95°52'00", on line between secs. 4 and 9, T.138 N., R.41 W., Becker County, on left wingwall of remains of old dam at outlet of Detroit Lake, 60 ft (18 m) upstream from bridge on County Highway 22 and 2.5 mi (4.0 km) Southwest of City of Detroit Lakes.

PERIOD OF RECORD.--July 1968 to July 1971, October 1972 to June 30, 1975 (discontinued).

GAGE.--Nonrecording gage read once daily. Datum of gage is 1,330.01 ft (405.39 m) above mean sea level, datum of 1929.

EXTREMES.--Maximum daily discharge during period October 1974 to June 1975, 113 ft³/s (3.20 m³/s) Apr. 29; maximum gage height, 4.88 ft (1.487 m) June 30; minimum daily discharge, 0.53 ft³/s (0.015 m³/s) Oct.4.
Period of record: Maximum daily discharge, 113 ft³/s (3.20 m³/s) Apr. 29, 1975; maximum gage height, 4.88 ft (1.487 m) June 30, 1975; minimum daily, -4.6 ft³/s (-0.13 m³/s) Oct. 9, 1969; no flow at times in 1968, 1969 and 1971.

REMARKS.--Records fair.

COOPERATION.--Gage Readings furnished by Pelican River Watershed District.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.70	4.0	8.1	12	15	17	27	112	37			
2	.61	4.0	8.1	13	15	17	27	110	37			
3	.61	4.3	8.8	14	15	17	25	112	35			
4	.53	4.8	8.8	14	15	17	24	112	36			
5	.91	4.8	8.8	14	15	18	24	113	34			
6	1.2	4.8	8.8	14	15	18	24	112	31			
7	1.6	4.8	8.8	15	15	18	21	108	31			
8	1.6	5.1	8.8	15	15	18	22	106	31			
9	1.5	5.6	9.2	15	15	18	21	105	32			
10	1.6	5.6	9.5	15	15	18	21	98	30			
11	1.8	5.6	9.2	16	15	19	21	92	29			
12	2.2	5.4	9.2	16	15	19	22	82	31			
13	2.0	5.6	9.8	16	15	19	24	79	31			
14	1.8	5.6	9.8	16	15	19	26	76	31			
15	1.6	5.4	9.8	17	15	19	27	76	32			
16	1.8	5.4	9.8	17	15	20	31	75	30			
17	2.0	5.9	9.8	16	15	20	40	69	31			
18	1.8	6.2	11	16	16	21	48	65	31			
19	2.0	6.8	11	16	16	21	56	65	42			
20	2.2	6.8	11	16	16	20	62	65	46			
21	2.0	6.8	11	16	17	20	70	66	50			
22	1.8	7.5	11	16	17	20	75	66	52			
23	1.6	7.5	12	15	17	21	82	61	54			
24	1.6	7.5	12	15	17	23	87	55	56			
25	1.5	7.5	12	15	17	23	90	51	57			
26	1.6	7.5	12	15	17	23	93	47	54			
27	1.6	7.5	12	15	17	24	97	47	53			
28	1.6	7.5	12	15	17	26	110	46	52			
29	2.2	7.5	12	15	---	27	113	45	70			
30	2.2	8.1	12	15	---	27	112	45	84			
31	2.4	---	12	15	---	28	---	41	---			
TOTAL	50.16	181.2	318.1	470	439	635	1524	2402	1250			
MEAN	1.62	6.04	10.3	15.2	15.7	20.5	50.8	77.5	41.7			
MAX	2.4	8.1	12	17	17	28	113	113	84			
MIN	.53	4.0	8.1	12	15	17	21	41	29			
AC-FT	99	359	631	932	871	1260	3020	4760	2480			

CAL YR 1974 TOTAL 10398.87 MEAN 28.5 MAX 112 MIN .53 AC-FT 20630

05035500 St. Clair Lake Outlet near Detroit Lakes, Minn.

LOCATION.--Lat 46°48'03", long 95°52'37", in NW¼ sec.4, T.138 N., R.41 W., Becker County, near right bank 25 ft (7.6 m) upstream from culvert on U.S. Highway 59, 500 ft (152 m) downstream from outlet of St. Clair Lake, 1 mi (1.6 km) upstream from Pelican River and 2 mi (3.2 km) southwest of City of Detroit Lakes.

PERIOD OF RECORD.--July 1968 to June 30, 1975 (discontinued).

GAGE.--Nonrecording gage read once daily. Datum of gage is 1,333.35 ft (406.41 m) above mean sea level, datum of 1929 (Minnesota Highway Department bench mark).

AVERAGE DISCHARGE.--6 years (1968-74), 6.42 ft³/s (0.182 m³/s), 4,650 acre-ft/yr (5.73 hm³/yr).

EXTREMES.--Maximum daily discharge during period October 1974 to June 1975, 29 ft³/s (0.82 m³/s) Apr. 19-24; maximum gage height, 3.53 ft (1.076 m) June 30; minimum daily discharge, 2.2 ft³/s (0.062 m³/s) Oct. 21; minimum gage height, 1.27 ft (0.387 m) Oct. 4.

Period of record: Maximum discharge, 31 ft³/s (0.88 m³/s) Apr. 29, 1969 (gage height, 3.15 ft or 0.960 m); minimum daily, 0.4 ft³/s (0.011 m³/s) Jan. 16 to Feb. 1, 1970.

REMARKS.--Records fair.

COOPERATION.--Gage reading furnished by Pelican River Watershed District.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.8	5.2	5.4	4.2	4.2	5.2	5.8	25	9.9			
2	2.6	5.6	5.3	4.3	4.3	5.2	5.8	24	9.5			
3	2.5	5.7	5.2	4.4	4.3	5.2	5.8	23	8.7			
4	2.4	6.3	5.1	4.3	4.4	5.2	5.9	22	9.0			
5	2.7	6.5	5.2	4.3	4.4	5.2	6.0	22	8.8			
6	3.1	6.8	5.1	4.1	4.5	5.2	6.1	22	8.6			
7	3.5	7.3	5.0	4.1	4.6	5.2	6.3	21	8.0			
8	3.6	7.3	5.0	4.0	4.7	5.2	6.5	21	7.8			
9	3.6	7.0	4.8	3.9	4.9	5.2	6.9	20	8.0			
10	3.6	7.3	4.7	3.9	5.1	5.2	7.3	19	7.8			
11	3.8	7.2	4.7	3.9	5.3	5.2	7.8	18	7.8			
12	3.7	6.8	4.7	3.9	5.7	5.2	8.4	17	7.8			
13	3.6	6.4	4.6	3.9	5.8	5.2	10	16	9.2			
14	2.5	6.4	4.5	3.9	5.9	5.2	12	15	9.1			
15	2.6	6.4	4.5	3.9	6.0	5.2	13	14	9.8			
16	2.6	6.5	4.5	3.9	6.0	5.2	15	13	11			
17	2.4	6.3	4.5	3.9	6.0	5.2	22	13	11			
18	2.4	6.3	4.5	3.9	6.0	5.2	27	12	11			
19	2.4	6.4	4.4	3.9	6.0	5.2	29	12	15			
20	2.4	6.5	4.4	3.9	6.0	5.3	29	12	19			
21	2.2	6.6	4.4	3.9	6.0	5.4	29	12	23			
22	2.4	6.7	4.4	3.9	5.9	5.6	28	11	26			
23	2.6	6.5	4.4	3.9	5.8	5.7	29	11	26			
24	2.9	6.4	4.4	3.9	5.7	5.8	29	11	26			
25	3.0	6.3	4.3	4.0	5.7	5.8	28	11	24			
26	3.1	6.2	4.4	4.1	5.6	5.8	27	11	23			
27	3.2	6.0	4.4	4.2	5.4	5.8	27	11	21			
28	3.2	5.8	4.3	4.2	5.3	5.8	27	11	18			
29	3.4	5.7	4.2	4.2	---	5.8	27	11	23			
30	3.6	5.5	4.2	4.2	---	5.8	26	11	27			
31	3.5	---	4.1	4.2	---	5.8	---	10	---			
TOTAL	91.9	191.9	143.6	125.2	149.5	167.2	512.6	482	433.8			
MEAN	2.96	6.40	4.63	4.04	5.34	5.39	17.1	15.5	14.5			
MAX	3.8	7.3	5.4	4.4	6.0	5.8	29	25	27			
MIN	2.2	5.2	4.1	3.9	4.2	5.2	5.8	10	7.8			
AC-FT	182	381	285	248	297	332	1020	956	860			

CAL YR 1974 TOTAL 3061.0 MEAN 8.39 MAX 23 MIN 2.2 AC-FT 6070

05035600 Pelican River at Muskrat Lake Outlet near Detroit Lakes, Minn.

LOCATION.--Lat 46°46'55", long 95°52'57", in SE¼ sec.8, T.138 N., R.41 W., Becker County, on downstream side of dam between Muskrat Lake and Sallie Lake at State Fish Hatchery, 3 mi (4.8 km) southwest of City of Detroit Lakes.

PERIOD OF RECORD.--July 1968 to June 30, 1975 (discontinued).

GAGE.--Two nonrecording gages. Datum of gage in the boat lock is 1,327.63 ft (404.66 m) above mean sea level, datum of 1929, and in the spillway the datum of gage is 1,328.98 ft (405.07 m) above mean sea level, datum of 1929.

AVERAGE DISCHARGE.--6 years (1968-74), 28.4 ft^3/s (0.804 m^3/s), 20,580 acre-ft/yr (25.4 hm^3/yr).

EXTREMES.--Maximum daily discharge during period October 1974 to June 1975, 146 ft^3/s (4.13 m^3/s) May 8, 9; minimum daily, 0.67 ft^3/s (0.019 m^3/s) Oct. 4.

Period of record: Maximum daily discharge, 146 ft^3/s (4.13 m^3/s) May 8, 9, 1975; no flow several days in 1968 and 1969.

REMARKS.--Records fair. Some regulation by manipulation of stoplogs in controls above station.

COOPERATION.--Gage Readings and record of stoplog changes in dam furnished by Pelican River Watershed District.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	11	13	16	21	22	37	134	67			
2	.97	10	13	17	21	22	40	132	63			
3	.81	10	13	18	21	21	41	127	60			
4	.67	12	13	19	20	21	39	131	63			
5	1.9	12	13	18	20	21	38	133	58			
6	2.5	11	13	19	21	21	35	138	54			
7	4.4	11	13	20	21	21	35	142	50			
8	4.6	11	13	20	21	22	32	146	45			
9	4.4	11	13	20	21	22	32	146	45			
10	4.7	12	12	20	21	22	30	145	43			
11	5.3	12	13	20	21	21	28	144	41			
12	4.9	12	14	21	22	22	26	140	37			
13	4.9	10	14	22	21	22	27	138	39			
14	4.4	10	14	22	22	21	33	137	37			
15	3.7	11	14	22	21	22	34	134	37			
16	4.2	11	14	22	21	22	39	134	37			
17	4.4	11	14	22	21	21	55	134	37			
18	3.9	11	15	23	22	21	65	131	37			
19	4.7	11	15	22	22	24	70	126	58			
20	5.1	12	15	22	22	28	81	123	63			
21	4.9	13	15	21	22	28	91	116	73			
22	4.9	13	16	21	21	28	99	114	80			
23	5.1	13	16	21	21	29	106	111	81			
24	5.1	13	17	21	22	29	106	108	82			
25	4.4	12	17	21	22	30	116	104	87			
26	4.4	13	16	20	22	31	119	98	88			
27	4.4	13	17	20	22	32	123	94	90			
28	4.9	13	17	22	22	31	131	92	93			
29	6.4	13	17	22	---	31	139	88	114			
30	7.2	13	17	21	---	31	137	84	126			
31	8.1	---	16	21	---	33	---	75	---			
TOTAL	131.45	351	452	636	597	772	1984	3799	1885			
MEAN	4.24	11.7	14.6	20.5	21.3	24.9	66.1	123	62.8			
MAX	8.1	13	17	23	22	33	139	146	126			
MIN	.67	10	12	16	20	21	26	75	37			
AC-FT	261	696	897	1260	1180	1530	3940	7540	3740			

CAL YR 1974 TOTAL 13242.75 MEAN 36.3 MAX 133 MIN .67 AC-FT 26270

05037100 Pelican River at Sallie Lake Outlet, near Detroit Lakes, Minn.

LOCATION.--Lat 46°45'27", long 95°53'57", in NW¼ sec.20, T.138 N., R.41 W., Becker County, on left bank near downstream end of culvert on County Highway 22, 250 ft (76 m) downstream from Sallie Lake, 800 ft (244 m) upstream from Minnesota Department of Conservation dam and 5 mi (8 km) southwest of City of Detroit Lakes.

PERIOD OF RECORD.--July 1968 to June 30, 1975 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 1,327.58 ft (404.65 m) above mean sea level, datum of 1929.

AVERAGE DISCHARGE.--6 years (1968-74), 32.7 ft^3/s (0.93 m^3/s), 23,690 acre-ft/yr (29.2 hm^3/yr).

EXTREMES.--Maximum discharge during period October 1974 to June 1975, 215 ft^3/s (6.09 m^3/s) June 21 (gage height, 1.90 ft or 0.579 m); minimum, 0.66 ft^3/s (0.02 m^3/s) Oct. 2, 3 (gage height, 0.78 ft or 0.238 m).

Period of record: Maximum discharge, 215 ft^3/s (6.09 m^3/s) June 21, 1975 (gage height, 1.90 ft or 0.579 m); no flow for several days in 1969, 1970.

REMARKS.--Records good.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	11	12	18	25	24	43	136	86			
2	.87	11	13	18	25	24	45	138	82			
3	.78	10	13	19	25	24	45	138	78			
4	1.0	9.8	13	20	25	24	45	138	75			
5	1.4	9.8	13	20	25	24	45	140	65			
6	1.9	9.8	13	21	25	24	45	140	54			
7	1.7	9.8	13	22	25	24	45	138	45			
8	1.9	9.8	14	23	25	24	55	132	42			
9	2.1	10	13	24	25	24	63	132	44			
10	2.2	10	12	23	25	24	62	136	43			
11	2.3	11	12	23	25	24	60	136	41			
12	2.1	12	13	23	25	25	58	138	44			
13	1.9	5.0	14	23	25	25	58	136	41			
14	2.1	6.3	14	23	25	24	57	138	35			
15	1.4	8.0	15	23	25	24	57	136	35			
16	1.4	8.4	15	23	25	24	57	136	28			
17	1.5	9.2	14	23	25	25	62	131	27			
18	1.5	9.8	14	23	25	25	68	129	52			
19	1.3	9.7	15	23	25	26	72	131	130			
20	1.4	9.7	15	23	25	27	73	131	91			
21	2.0	10	16	23	25	28	79	133	110			
22	2.2	13	16	23	25	30	82	130	97			
23	2.3	13	17	23	25	30	88	138	88			
24	2.2	13	18	23	25	31	91	136	89			
25	2.2	12	18	24	25	32	94	129	90			
26	2.3	12	18	25	25	34	99	120	92			
27	2.5	12	19	25	24	37	105	115	77			
28	2.8	12	20	25	24	37	111	111	80			
29	3.6	12	20	25	---	37	119	105	91			
30	3.8	12	18	25	---	38	133	98	90			
31	4.8	---	18	25	---	40	---	92	---			
TOTAL	62.55	311.1	468	704	698	863	2116	4017	2042			
MEAN	2.02	10.4	15.1	22.7	24.9	27.8	70.5	130	68.1			
MAX	4.8	13	20	25	25	40	133	140	130			
MIN	.78	5.0	12	18	24	24	43	92	27			
AC-FT	124	617	928	1400	1380	1710	4200	7970	4050			

CAL YR 1974 TOTAL 14089.05 MEAN 38.6 MAX 151 MIN .78 AC-FT 27950

05040500 Pelican River near Fergus Falls, Minn.

LOCATION.--Lat 46°20'10", long 96°07'10", in NE¼ sec.17, T.133 N., R.43 W., Otter Tail County, on left bank 990 ft (302 m) downstream from bridge on U.S. Highway 52, 3 mi (4.8 km) northwest of Fergus Falls, and 7.5 mi (12 km) upstream from mouth.

DRAINAGE AREA.--482 mi² (1,248 km²).

PERIOD OF RECORD.--June 1909 to December 1912, July 1942 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,176.98 ft (358.744 m) above mean sea level, datum of 1929 (levels by Minnesota Highway Department). June 19, 1909, to Dec. 31, 1912, nonrecording gage at site 1 mi (1.6 km) downstream at different datum. July 1, 1942, to Nov. 6, 1955, nonrecording gage and Nov. 7, 1955, to Sept. 30, 1963, water stage recorder, at site 900 ft (274 m) upstream at datum 3.00 ft (0.91 m) higher.

AVERAGE DISCHARGE.--36 years (1909-12, 1942-75), 80.7 ft³/s (2.29 m³/s), 58,470 acre-ft/yr (72.1 hm³/yr).

EXTREMES.--Current year: Maximum discharge, 585 ft³/s (16.6 m³/s) Apr. 19 (gage height, 6.72 ft or 2.048 m, backwater from ice); minimum daily, 29 ft³/s (0.82 m³/s) Dec. 26 to Jan. 24; minimum gage height, 3.30 ft (1.006 m) Nov. 13.

Period of record: Maximum discharge, 756 ft³/s (21.4 m³/s) Mar. 29, 1943 (gage height, 8.53 ft or 2.600 m, present datum); maximum gage height, 8.99 ft (2.740 m) Mar. 21, 1966 (backwater from ice); no flow on many days in 1946, 1949-50.

REMARKS.--Records good except those for winter periods, which are fair.

REVISIONS (WATER YEARS).--WSP 955: Drainage area. WSP 1728: 1958.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	44	33	29	41	44	80	302	273	234	186	143
2	45	51	33	29	41	45	82	300	270	266	190	153
3	44	67	33	29	41	45	82	289	265	299	190	156
4	44	65	33	29	41	46	83	281	265	308	194	153
5	42	64	33	29	41	46	84	272	265	303	199	152
6	42	62	33	29	41	47	87	264	261	289	194	153
7	43	61	33	29	41	47	90	263	256	282	203	156
8	44	59	32	29	41	48	94	265	248	279	190	154
9	45	57	31	29	41	48	99	271	246	273	188	150
10	45	57	30	29	41	49	105	285	239	271	181	147
11	47	56	30	29	41	49	113	289	233	270	173	144
12	47	56	30	29	41	50	128	278	230	270	168	138
13	47	51	30	29	41	51	143	268	223	263	162	136
14	45	50	30	29	41	52	160	268	225	256	157	135
15	45	49	30	29	41	55	185	262	235	251	152	132
16	45	48	30	29	41	59	230	259	223	233	152	130
17	45	45	30	29	41	63	275	256	227	224	149	126
18	45	40	30	29	42	68	352	256	227	211	145	134
19	44	37	30	29	42	72	550	255	256	207	143	140
20	44	39	30	29	42	74	370	256	266	207	147	144
21	42	41	30	29	42	75	305	256	227	190	146	141
22	42	39	30	29	43	76	278	258	240	194	143	139
23	42	36	30	29	43	77	261	268	234	215	149	139
24	41	38	30	29	43	78	262	275	223	215	158	135
25	41	42	30	30	43	78	266	278	202	215	160	128
26	41	41	29	32	44	78	279	273	187	211	158	125
27	41	36	29	33	44	79	279	265	180	207	154	121
28	41	36	29	35	44	79	276	261	170	203	151	119
29	40	34	29	36	---	79	290	261	191	199	147	117
30	40	33	29	38	---	80	291	259	202	186	144	117
31	41	---	29	40	---	80	---	269	---	182	140	---
TOTAL	1345	1434	948	940	1169	1917	6179	8362	6989	7413	5113	4157
MEAN	43.4	47.8	30.6	30.3	41.8	61.8	206	270	233	239	165	139
MAX	47	67	33	40	44	80	550	302	273	308	203	156
MIN	40	33	29	29	41	44	80	255	170	182	140	117
AC-FT	2670	2840	1880	1860	2320	3800	12260	16590	13860	14700	10140	8250

CAL YR 1974 TOTAL 41445 MEAN 114 MAX 360 MIN 29 AC-FT 82210
WTR YR 1975 TOTAL 45966 MEAN 126 MAX 550 MIN 29 AC-FT 91170

05045950 Orwell Lake near Fergus Falls, Minn.

LOCATION.--Lat 46°12'55", long 96°10'40", in SW¼ sec.26, T.132 N., R.44 W., Otter Tail County, at dam on Otter Tail River at outlet of Orwell Lake, 7 mi (11 km) southwest of Fergus Falls, Minn.

DRAINAGE AREA.--1,830 mi^2 (4,740 km^2), approximately.

PERIOD OF RECORD.--March 1953 to current year. Prior to October 1971, published as Orwell Reservoir.

GAGE.--Water-stage recorder. Datum of gage is 1,000.00 ft (305 m) above mean sea levedl, adjustment of 1912. Gage readings reduced to elevations above mean sea level.

EXTREMES.--Current year: Maximum contents, 14,680 acre-ft (18.1 hm^3) July 7 (elevation, 1,070.50 ft or 326.288 m); minimum, 1,200 acre-ft (1.48 hm^3) Apr. 5 (elevation, 1,048.99 ft or 319.732 m).

Period of record: Maximum contents, 16,920 acre-ft (20.9 hm^3) June 17, 1962, May 23, 1966 (elevation, 1,072.38 ft or 326.861 m); minimum (after initial filling), 844 acre-ft (1.04 hm^3) Aug. 26, 27, 1953 (elevation, 1,046.96 ft or 319.113 m).

REMARKS.--Reservoir is formed by earth dam with concrete spillway with one taintor gate; storage began in March 1953. Capacity to elevation 1,070 ft (326 m)(maximum operating stage) is 14,100 acre-ft (17.4 hm^3) of which 13,100 acre-ft (16.2 hm^3) is controlled storage above elevation 1,048 ft (319 m) minimum operating stage). Dead storage, 210 acre-ft (0.259 hm^3). Figures given herein represent total contents. Reservoir is used for flood control and to increase low flow for water supply and pollution abatement.

COOPERATION.--Records furnished by Corps of Engineers.

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.30	1,069.76	13,840	-
Oct. 31	1,067.78	11,800	-2,040
Nov. 30	1,062.92	7,740	-4,060
Dec. 31	1,059.83	5,650	-2,090
CAL YR 1974	-	-	-310
Jan. 31	1,056.66	3,950	-1,700
Feb. 28	1,053.85	2,740	-1,210
Mar. 31	1,050.12	1,490	-1,250
Apr. 30	1,062.82	7,670	+6,180
May 31	1,066.98	11,080	+3,410
June 30	1,069.87	13,960	+2,880
July 31	1,068.70	12,700	-1,260
Aug. 31	1,065.59	9,870	-2,830
Sept.30	1,068.21	12,210	+2,340
WTR YR 1975	-	-	-1,630

05046000 Otter Tail River below Orwell Dam, near Fergus Falls, Minn.

LOCATION.--Lat 46°12'35", long 96°11'05", in NE¼ sec.34, T.132 N., R.44 W., Otter Tail County, on left bank 0.7 mi (1.1 km) downstream from Orwell Dam, 6.1 mi (9.8 km) downstream from Dayton Hollow Dam, 8 mi (13 km) southwest of Fergus Falls, and 11.1 mi (17.9 km) downstream from Pelican River.

DRAINAGE AREA.--1,830 mi^2 (4,740 km^2), approximately.

PERIOD OF RECORD.--October 1930 to current year. Prior to October 1952, published as Otter Tail River below Pelican River, near Fergus Falls. Monthly discharge only for some periods, published in WSP 1308.

GAGE.--Water-stage recorder. Datum of gage is 1,029.65 ft (313.837 m) above mean sea level, adjustment of 1912 (levels by Corps of Engineers). Oct. 11, 1930, to Nov. 17, 1933, at same site at datum 2.00 ft (0.61 m) higher; Nov. 18, 1933, to Mar. 21, 1953, at site 6.1 mi (9.8 km) upstream at datum 40.30 ft (12.283 m) higher.

AVERAGE DISCHARGE.--45 years, 306 ft^3/s (8.67 m^3/s), 221,700 acre-ft/yr (273 hm^3/yr).

EXTREMES.--Current year: Maximum discharge, 1,090 ft^3/s (30.9 m^3/s) June 21 (gage height, 4.09 ft or 1.247 m); minimum discharge, 8.3 ft^3/s (0.24 m^3/s) Aug. 26 (gage height, 1.59 ft, or 0.485 m), result of regulation.
Period of record: Maximum discharge, 1,710 ft^3/s (48.4 m^3/s) June 17, 1953 (gage height, 5.60 ft or 1.707 m, backwater from aquatic vegetation); minimum, 0.70 ft^3/s (0.020 m^3/s) Aug. 5, 1970 (gage height, 1.28 ft or 0.390 m), result of regulation.

REMARKS.--Records good. Flow regulated by Orwell Lake beginning Mar. 21, 1953 (see preceding page) and powerplants upstream.

REVISIONS (WATER YEARS).--WSP 785: 1934(M). WSP 1208: 1947(M). WSP 1308: 1931(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	280	299	195	186	219	314	543	910	1040	982	662	401
2	257	294	195	186	223	314	528	899	1050	972	662	401
3	239	288	195	186	244	321	510	899	1070	953	656	401
4	239	294	194	186	273	333	499	898	1030	959	656	401
5	243	288	191	186	277	331	493	888	991	959	656	406
6	244	288	191	186	277	333	493	887	1000	959	656	406
7	314	288	191	186	276	347	494	891	1020	959	656	406
8	374	288	191	186	274	357	511	886	1040	953	662	406
9	371	287	187	186	271	352	531	889	1050	953	656	406
10	327	282	191	221	275	348	532	890	1040	953	645	406
11	309	277	191	239	273	344	530	898	1030	953	645	406
12	309	277	187	239	280	345	569	901	1010	946	651	406
13	308	277	186	239	277	338	613	914	1000	940	662	406
14	307	277	186	236	266	331	626	962	994	934	656	400
15	309	277	182	229	265	328	473	993	985	934	651	367
16	309	277	182	223	271	329	381	986	972	861	645	331
17	309	272	182	189	266	325	428	991	975	808	639	330
18	307	271	182	162	266	327	521	987	974	767	645	332
19	304	271	182	162	269	336	630	991	982	749	645	335
20	304	271	186	165	260	418	640	1010	984	743	645	335
21	304	265	186	165	258	609	693	1020	1050	738	645	335
22	304	265	186	165	264	692	832	1030	1090	755	639	335
23	299	265	186	186	264	671	897	998	1090	738	633	338
24	299	260	186	217	263	655	896	968	1090	732	633	340
25	299	260	186	214	266	596	894	977	1080	732	564	340
26	299	219	182	214	291	483	895	990	1080	738	350	340
27	299	219	182	214	310	426	898	1000	1020	743	395	340
28	299	219	182	214	313	444	907	1010	980	738	395	340
29	299	209	182	214	---	461	911	1020	984	732	401	337
30	299	198	186	215	---	471	911	1030	977	697	401	338
31	299	---	186	219	---	513	---	1040	---	656	401	---
TOTAL	9262	8022	5797	6215	7531	12792	19279	29653	30678	26236	18508	11071
MEAN	299	267	187	200	269	413	643	957	1023	846	597	369
MAX	374	299	195	239	313	692	911	1040	1090	982	662	406
MIN	239	198	182	162	219	314	381	886	972	656	350	330
AC-FT	18370	15910	11500	12330	14940	25370	38240	58820	60850	52040	36710	21960

CAL YR 1974 TOTAL 188789 MEAN 517 MAX 1290 MIN 182 AC-FT 374500
WTR YR 1975 TOTAL 185044 MEAN 507 MAX 1090 MIN 162 AC-FT 367000

05050000 Bois de Sioux River near White Rock, S. Dak.

LOCATION.--Lat 45°51'45", long 96°34'25", in SW¼SW¼ sec.27, T.128 N., R.47 W., Roberts County, on left bank just downstream from Big Slough Outlet, 300 ft (91 m) downstream from White Rock Dam, 4 mi (6 km) south of White Rock, and 5 mi (8 km) northwest of Wheaton, Minn.

DRAINAGE AREA.--1,160 mi² (3,004 km²), approximately.

PERIOD OF RECORD.--October 1941 to current year.

GAGE.--Water-stage recorder. Datum of gage is 960.00 ft (292.608 m) above mean sea level, adjustment of 1912 (levels by Corps of Engineers). Prior to Jan. 14, 1943, nonrecording gage at same site at datum 0.11 ft (0.03 m) lower. Jan. 15, 1943, to Sept. 30, 1963, water-stage recorder at same site at datum 0.11 ft (0.03 m) lower.

AVERAGE DISCHARGE.--34 years, 78.7 ft³/s (2.229 m³/s), 57,020 acre-ft/yr (70.3 hm³/yr).

EXTREMES.--Current year: Maximum discharge, 552 ft³/s (15.6 m³/s) July 16 (gage height, 8.95 ft or 2.728 m); maximum gage height, 10.41 ft (3.173 m) July 1 (backwater from inflow downstream); no flow for many days.
Period of record: Maximum discharge, 3,770 ft³/s (107 m³/s), occurred during period Apr. 19-21, 1969 (gage height, 15.07 ft or 4.593 m, from floodmark); no flow at times in most years.

REMARKS.--Records fair. Flow regulated by Lake Traverse-Boise de Sioux Flood Control and Water Conservation project (available capacity for flood control, 137,000 acre-ft or 169 hm³).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.01	.01					0	210	19	341	3.8	12
2	0	.01					0	237	21	322	12	15
3	0	.01					0	247	22	288	4.7	15
4	0	0					0	254	25	265	4.8	12
5	.01	0					0	250	21	250	4.8	12
6	.01	0					0	220	14	252	7.0	12
7	.02	0					0	218	12	293	18	9.8
8	.04	0					0	214	10	244	14	10
9	.06	0					0	218	15	288	12	11
10	.07	0					0	218	11	278	11	12
11	.07	0					0	211	12	297	11	7.4
12	.06	0					.02	211	11	344	11	11
13	.04	0					.50	215	15	350	11	11
14	.02	0					3.0	202	15	412	11	11
15	.01	0					5.6	197	18	482	9.4	11
16	.01	0					10	208	20	507	7.4	10
17	.01	0					23	203	27	551	7.4	11
18	.01	0					35	202	48	526	7.2	12
19	0	0					44	204	68	492	8.3	10
20	0	0					49	193	104	458	12	5.4
21	0	0					55	177	88	370	20	8.8
22	0	0					60	171	160	277	21	28
23	0	0					58	181	129	277	22	48
24	0	0					53	181	169	265	20	46
25	0	0					28	155	210	258	17	45
26	0	0					25	165	242	230	13	55
27	0	0					43	140	374	226	12	65
28	0	0					55	105	278	212	15	65
29	0	0			---		118	55	217	203	13	60
30	0	0			---		197	40	187	177	14	64
31	0	---			---		---	12	---	12	15	---
TOTAL	.45	.03	0	0	0	0	795.12	5696	2614	9785	370.9	705.3
MEAN	.015	.001	0	0	0	0	26.5	184	87.1	316	12.0	23.5
MAX	.07	.01	0	0	0	0	197	257	374	551	22	65
MIN	0	0	0	0	0	0	0	12	10	12	4.8	5.0
AC-FT	.9	.06	0	0	0	0	1580	11300	5180	19410	736	1400

CAL YR 1974 TOTAL 908.84 MEAN 2.50 MAX 25 MIN 0 AC-FT 1800
WTR YR 1975 TOTAL 19966.80 MEAN 54.7 MAX 551 MIN 0 AC-FT 39600

05051500 RED RIVER OF THE NORTH AT WAHPETON, N. DAK.

LOCATION.--Lat 46°15'55", long 96°35'40", in NE¼ sec.8, T.132 N., R.47 W., Richland County, on left bank in Wahpeton, 800 ft (240 m) downstream from confluence of Bois de Sioux and Otter Tail Rivers and at mile 548.6 (kilometre 882.7).

DRAINAGE AREA.--4,010 mi² (10,390 km²), approximately.

PERIOD OF RECORD.--April 1942 to current year. Gage-height records collected in this vicinity since 1917 are contained in reports of U.S. Weather Bureau.

GAGE.--Water-stage recorder and concrete and wooden dam. Datum of gage is 943.24 ft (287.50 m) above mean sea level. Prior to Aug. 6, 1943, U.S. Weather Bureau nonrecording gage 800 ft (240 m) upstream, converted to present datum. Aug. 6, 1943, to Oct. 27, 1950, nonrecording gage at present site and datum.

AVERAGE DISCHARGE.--32 years (1943-75), 538 ft³/s (15.24 m³/s) 389,800 acre-ft/yr (481 hm³/yr); median of yearly mean discharges, 500 ft³/s (14.2 m³/s) 362,000 acre-ft/yr (450 hm³/yr).

EXTREMES.--Current year: Maximum discharge, 3,850 ft³/s (109 m³/s) July 3, gage height, 10.84 ft (3.304 m); minimum, 85 ft³/s (2.41 m³/s) Dec. 9, gage height, 2.84 ft (0.866 m).

Period of record: Maximum discharge, 9,200 ft³/s (261 m³/s) Apr. 10, 1969, gage height, 16.34 ft (4.980 m); minimum, 8 ft³/s (0.23 m³/s) Aug. 25, 1961, gage height, 2.26 ft (0.689 m); minimum gage height, 1.76 ft (0.536 m) Sept. 8, 9, 1969 (gates open).

A stage of 17.0 ft (5.182 m), discharge, 10,500 ft³/s (297 m³/s) occurred in the spring of 1897 and has not been exceeded since.

REMARKS.--Records good except those for the winter period, which are fair. Flow regulated by Orwell Reservoir, capacity, 14,100 acre-ft (17.4 hm³) at elevation 1,070 ft (326.136 m) above mean sea level, adjustment of 1912; Lake Traverse, capacity, 137,000 acre-ft (169 hm³), available for flood control; numerous other controlled lakes and ponds, and several powerplants. Records of chemical analyses for the water year 1975 are published in Section 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	300	332	234	155	192	255	420	1740	1010	2370	760	385
2	268	311	219	155	192	255	420	1600	983	3480	710	386
3	239	288	208	155	198	250	420	1470	967	3810	650	377
4	212	286	205	154	220	250	420	1410	982	3800	622	379
5	221	286	203	155	260	250	480	1340	955	3550	614	385
6	218	282	205	155	260	250	500	1300	896	3130	614	384
7	220	281	200	156	260	250	500	1270	881	2660	614	388
8	263	280	137	145	260	250	520	1250	882	2190	604	388
9	352	271	124	141	260	250	520	1230	899	1930	607	387
10	372	273	210	140	260	250	580	1220	906	1770	614	381
11	333	268	222	130	260	250	621	1210	868	1670	614	375
12	298	268	211	130	260	250	681	1200	880	1600	618	371
13	289	268	200	130	260	255	1110	1200	867	1580	618	372
14	285	262	192	240	260	260	1750	1210	872	1560	609	370
15	293	350	186	250	260	275	2060	1230	909	1540	606	363
16	288	421	177	245	258	300	1600	1210	896	1570	611	356
17	288	329	168	240	258	325	1830	1210	905	1540	605	336
18	287	268	162	235	258	370	1770	1210	924	1470	598	329
19	292	261	160	232	258	380	2050	1220	1140	1400	610	330
20	294	252	160	230	258	400	2200	1200	1640	1320	642	333
21	285	297	160	220	256	420	1960	1180	1990	1280	628	333
22	282	271	160	218	256	440	1630	1180	2510	1220	629	333
23	288	268	160	214	256	470	1590	1200	2600	1190	632	325
24	285	175	158	208	255	500	1590	1170	2220	1100	625	325
25	285	182	158	200	255	490	1550	1110	1880	1050	606	355
26	286	224	158	200	255	480	1650	1090	1750	1000	566	358
27	286	246	155	200	255	460	1800	1090	1620	980	387	364
28	282	287	155	200	255	450	1900	1080	1550	960	376	373
29	283	249	155	198	---	440	1840	1070	1550	953	382	373
30	286	243	155	196	---	440	1790	1040	1570	900	385	376
31	295	---	155	194	---	430	---	1010	---	830	389	---
TOTAL	8755	8251	5512	5821	6995	10595	37752	38150	38502	55403	18145	10890
MEAN	282	275	178	188	250	342	1258	1231	1283	1787	585	363
MAX	372	421	234	250	260	500	2200	1740	2600	3810	760	388
MIN	212	175	124	130	192	250	420	1010	867	830	376	325
AC-FT	17370	16370	10930	11550	13870	21020	74880	75670	76370	109900	35990	21600

CAL YR 1974 TOTAL 191930 MEAN 526 MAX 1240 MIN 124 AC-FT 380700
WTR YR 1975 TOTAL 244771 MEAN 671 MAX 3810 MIN 124 AC-FT 485500

05054000 RED RIVER OF THE NORTH AT FARGO, N. DAK.

LOCATION.--Lat 46°51'40", long 96°47'00", in NW¼NE¼ sec.18, T.139 N., R.48 W., Cass County, at city waterplant on 4th St. S. in Fargo, 25 mi (40 km) upstream from mouth of Sheyenne River and at mile 453.0 (kilometre 728.9).

DRAINAGE AREA.--6,800 mi² (17,600 km²), approximately.

PERIOD OF RECORD.--May 1901 to current year. Published as "at Moorhead, Minn." 1901. Monthly discharge only for some periods, published in WSP 1308.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 861.8 ft (262.68 m) above mean sea level. Oct. 1, 1960, to Sept. 30, 1962, water-stage recorder at present site at datum 5.6 ft (1.71 m) higher. See WSP 1728 or 1913 for history of changes prior to Oct. 1, 1960.

AVERAGE DISCHARGE (UNADJUSTED).--74 years, 550 ft³/s (15.58 m³/s), 398,500 acre-ft/yr (491 hm³/yr); median of yearly mean discharges, 440 ft³/s (12.5 m³/s) 319,000 acre-ft/yr (390 hm³/yr).

EXTREMES.--Current year: Maximum discharge, 13,200 ft³/s (374 m³/s) July 4, gage height, 33.26 ft (10.138 m); minimum discharge, 104 ft³/s (2.95 m³/s) Nov. 27, gage height, 13.63 ft (4.154 m).

Period of record: Maximum discharge, 25,300 ft³/s (716 m³/s) Apr. 15, 1969, gage height, 37.34 ft (11.381 m); no flow for many days in each year for period 1932-41, Sept. 30, Oct. 1, 2, 1970.

Flood of Apr. 7, 1897 reached a stage of 39.1 ft (11.92 m) present datum, discharge, 25,000 ft³/s (708 m³/s) at site 1.5 mi (2.4 km) downstream.

REMARKS.--Records good except those for the winter period, which are fair. Flow regulated by Orwell Reservoir, capacity, 14,100 acre-ft (17.4 hm³) at elevation 1,070 ft (326.136 m) above mean sea level, adjustment of 1912; Lake Traverse, capacity, 137,000 acre-ft (169 hm³), available for flood control; other controlled lakes and ponds and several powerplants. Some small diversions for municipal supply. Figures of daily discharge do not include diversion by cities of Fargo and Moorhead. Records of chemical analyses and water temperatures for the water year 1975 are published in Section 2 of this report.

REVISIONS (WATER YEARS).--WSP 1308: 1902-4, 1906-7, 1910-14, 1916, 1918, 1924. WSP 1388: 1905-6, 1917-20(M), 1935(M), 1938-39(M), 1943.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	298	365	238	170	210	270	510	2900	1120	10600	1050	507
2	302	342	233	168	210	280	510	2600	1100	11900	980	481
3	302	330	213	168	210	280	510	2200	1080	12800	920	468
4	336	329	204	164	210	280	515	2070	1070	13100	846	468
5	318	313	195	164	210	280	520	1850	1060	13100	798	468
6	290	296	195	162	211	280	525	1680	1070	12500	696	468
7	268	290	195	162	260	280	530	1560	1050	11600	668	468
8	253	290	195	160	285	280	555	1480	1000	10600	654	468
9	253	290	190	155	290	280	570	1400	1000	9450	633	468
10	274	285	164	152	290	280	580	1340	1000	8100	619	468
11	336	285	148	145	290	285	718	1300	995	6800	626	456
12	365	274	152	140	290	290	959	1270	1000	5650	640	456
13	353	274	186	135	290	300	1610	1230	995	4850	640	456
14	330	268	200	130	288	305	2000	1250	986	4300	647	450
15	308	268	204	125	288	320	3500	1220	986	3930	675	443
16	290	213	204	120	285	355	3750	1210	1000	3700	675	443
17	295	186	200	230	285	370	4950	1210	1040	3400	675	443
18	302	200	190	260	285	380	6600	1260	1040	2500	675	462
19	308	324	182	260	285	385	8350	1270	1200	1850	696	413
20	308	359	172	250	285	388	8370	1440	2790	1730	734	382
21	308	284	172	240	285	419	8380	1370	3970	1610	710	382
22	296	263	170	235	282	475	7500	1310	4440	1520	696	382
23	280	285	170	230	282	494	6250	1290	4490	1460	710	382
24	268	213	170	220	280	549	5090	1270	4500	1400	720	382
25	268	190	170	215	280	577	4500	1260	4750	1320	730	382
26	268	148	170	215	280	580	3980	1260	4900	1280	742	371
27	268	111	170	215	280	590	3800	1190	4750	1250	742	388
28	268	114	170	210	270	580	3650	1180	4360	1210	696	406
29	280	172	170	210	---	560	3450	1170	5800	1140	570	400
30	280	223	170	210	---	540	3300	1160	8350	1060	556	406
31	308	---	170	210	---	520	---	1150	---	1020	528	---
TOTAL	9181	7784	5732	5830	7496	12052	96032	45350	72892	166730	21947	13017
MEAN	296	259	185	188	268	389	3201	1463	2430	5378	708	434
MAX	365	365	238	260	290	590	8380	2900	8350	13100	1050	507
MIN	253	111	148	120	210	270	510	1150	986	1020	528	371
AC-FT	18210	15440	11370	11560	14870	23910	190500	89950	144600	330700	43530	25820
(+)	870	822	799	789	712	790	763	823	880	1033	1036	851
MEAN*	310	273	198	201	281	402	3214	1476	2445	5395	724	448
AC-FT*	19060	16240	12170	12360	15610	24720	191200	90760	145500	331700	44520	26660

			OBSERVED						ADJUSTED	
CAL YR 1974	TOTAL 219999	MEAN 603	MAX 4040	MIN 111	AC-FT 436400	MEAN 617	AC-FT 446500
WTR YR 1975	TOTAL 464043	MEAN 1271	MAX 13100	MIN 111	AC-FT 920400	MEAN 1285	AC-FT 930300

+ Diversions in acre-feet by cities of Fargo and Moorhead.

* Adjusted for diversion by cities of Fargo and Moorhead.

05061000 Buffalo River near Hawley, Minn.

LOCATION.--Lat 46°51'00", long 96°19'45", near center of SE¼ sec.14, T.139 N., R.45 W., Clay County, near left downstream end of bridge on farm lane, 2 mi (3 km) southwest of Hawley.

DRAINAGE AREA.--322 mi² (834 km²).

PERIOD OF RECORD.--March 1945 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,111.91 ft (338.91 m) above mean sea level, datum of 1929. Prior to Jan. 29, 1953, nonrecording gage at bridge 1,800 ft (549 m) upstream at datum 3.17 ft (0.97 m) lower.

AVERAGE DISCHARGE.--30 years, 76.0 ft³/s (2.152 m³/s), 55,060 acre-ft/yr (67.9 hm³/yr).

EXTREMES.--Current year: Maximum discharge, 2,050 ft³/s (58.1 m³/s) July 1 (gage height, 9.76 ft or 2.975 m); minimum daily, 16 ft³/s (0.45 m³/s) Jan. 21 to Feb. 8.
Period of record: Maximum discharge, 2,050 ft³/s (58.1 m³/s) July 1, 1975 (gage height, 9.76 ft or 2.975 m); minimum, 4.8 ft³/s (0.14 m³/s) Aug. 27, 1969; minimum gage height, 2.55 ft (0.777 m) Sept. 5, 1961.
Maximum stage known, about 11.3 ft (3.44 m), present datum, spring of 1921, from information by local resident.

REMARKS.--Records good except those for winter period, which are fair.

REVISIONS (WATER YEARS).--WSP 1308: 1945-46(M), 1948(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	45	24	20	16	21	26	479	108	1970	106	40
2	19	60	24	20	16	21	26	444	104	1910	119	40
3	18	57	25	20	16	22	26	410	101	1720	111	35
4	19	50	25	20	16	22	26	371	98	1520	103	34
5	20	43	25	20	16	22	26	331	96	1370	96	36
6	25	38	25	19	16	22	26	303	94	1230	93	36
7	26	37	25	19	16	23	26	278	92	1140	86	34
8	29	36	25	19	16	23	27	265	88	1050	78	34
9	28	35	25	19	17	24	30	257	87	970	73	33
10	27	34	25	18	17	24	35	243	90	866	70	33
11	26	33	25	18	17	24	54	232	91	750	66	32
12	25	32	25	18	17	25	90	218	92	636	62	30
13	24	31	25	18	17	25	170	205	92	536	60	28
14	25	30	24	18	17	26	335	203	89	460	57	27
15	24	29	24	18	18	26	734	198	88	385	55	27
16	24	28	24	17	18	28	634	188	87	330	54	26
17	24	27	23	17	18	29	647	179	85	292	52	26
18	25	27	23	17	18	31	946	174	85	260	51	26
19	24	26	23	17	19	33	1040	168	140	234	48	29
20	23	26	23	17	19	34	1020	169	415	216	47	31
21	23	25	22	16	19	35	985	172	732	195	46	31
22	23	25	22	16	19	35	970	169	736	181	42	31
23	23	25	22	16	20	34	890	165	669	176	43	31
24	23	24	22	16	20	33	821	160	728	165	42	33
25	23	24	22	16	20	32	745	151	744	146	38	29
26	23	24	21	16	20	30	679	144	683	134	36	26
27	23	24	21	16	21	29	644	137	594	124	34	26
28	24	24	21	16	21	28	592	133	515	115	32	25
29	25	24	21	16	---	27	555	126	1120	107	31	26
30	26	24	21	16	---	26	515	118	1660	98	33	26
31	29	---	20	16	---	26	---	112	---	97	32	---
TOTAL	739	967	722	545	500	840	13340	6902	10403	19383	1896	921
MEAN	23.8	32.2	23.3	17.6	17.9	27.1	445	223	347	625	61.2	30.7
MAX	29	60	25	20	21	35	1040	479	1660	1970	119	40
MIN	18	24	20	16	16	21	26	112	85	97	31	25
AC-FT	1470	1920	1430	1080	992	1670	26460	13690	20630	38450	3760	1830

CAL YR 1974 TOTAL 35666 MEAN 97.7 MAX 1280 MIN 18 AC-FT 70730
WTR YR 1975 TOTAL 57158 MEAN 157 MAX 1970 MIN 16 AC-FT 113400

NOTE.--No gage-height record Feb. 1 to Mar. 13.

05061500 South Branch Buffalo River at Sabin, Minn.

LOCATION.--Lat 46°46'20", long 96°37'40", in SW¼SW¼ sec.9, T.138 N., R.47 W., Clay County, near center of span on downstream side of highway bridge, 0.3 mi (0.5 km) downstream from Stony Creek and 1 mi (1.6 km) east of Sabin.

DRAINAGE AREA.--522 mi^2 (1,351 km^2).

PERIOD OF RECORD.--March 1945 to current year.

GAGE.--Nonrecording gage and crest-stage gage. Datum of gage is 902.39 ft (275.05 m) above mean sea level, datum of 1929 (levels by Soil Conservation Service). Prior to Aug. 17, 1948, nonrecording gage at site 1 mi (1.6 km) downstream at different datum.

AVERAGE DISCHARGE.--30 years, 57.4 ft^3/s (1.626 m^3/s), 41,590 acre-ft/yr (51.3 hm^3/yr).

EXTREMES.--Current year: Maximum discharge, 8,500 ft^3/s (241 m^3/s) July 2 (gage height, 19.90 ft or 6.066 m); no flow for many days.

Period of record: Maximum discharge, 8,500 ft^3/s (241 m^3/s) July 2, 1975 (gage height, 19.90 ft or 6.066 m); no flow for many days in most years.

REMARKS.--Records fair.

REVISIONS (WATER YEARS).--WSP 1308: 1949(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.15	9.7	6.5	.90	.11	0	1.1	227	11	8200	15	4.1
2	.15	13	6.1	.80	.11	0	1.1	201	8.2	8160	11	6.9
3	.15	19	5.8	.74	.10	0	1.0	175	7.0	6370	16	3.2
4	.23	28	5.5	.66	.10	0	1.0	145	11	5970	22	1.9
5	1.2	32	5.2	.60	.08	0	1.0	121	20	2140	18	1.8
6	2.0	30	5.0	.55	.07	0	1.0	106	21	1100	15	1.5
7	6.2	29	4.8	.50	.06	0	1.1	88	17	718	12	1.1
8	6.1	24	4.6	.46	.05	0	1.2	78	12	607	9.8	.74
9	6.0	20	4.5	.42	.04	0	1.8	73	7.2	621	8.6	.04
10	6.9	20	4.4	.39	.02	0	5.0	68	6.5	526	7.3	.09
11	10	22	4.3	.36	.02	0	20	62	6.0	415	6.0	.09
12	10	16	4.0	.33	.02	0	70	56	6.0	259	4.4	.09
13	11	13	3.8	.30	.01	0	500	48	5.7	211	3.4	.12
14	12	12	3.6	.28	.01	0	1410	50	4.9	182	3.1	.07
15	12	12	3.4	.26	.01	0	1340	47	6.0	145	3.0	.08
16	11	11	3.2	.24	0	.02	1030	50	11	114	3.2	.18
17	8.2	11	3.0	.23	0	.10	1090	45	8.9	95	2.4	.22
18	5.7	11	2.9	.22	0	.20	1240	42	8.2	79	1.5	1.7
19	5.5	12	2.7	.20	0	.40	960	40	78	67	1.5	2.8
20	7.0	11	2.5	.19	0	1.5	754	76	680	59	1.7	2.6
21	7.0	12	2.3	.18	0	1.8	610	73	980	53	1.6	1.9
22	10	12	2.2	.17	0	2.0	515	56	1390	45	2.4	1.5
23	9.7	12	2.0	.16	0	1.9	426	52	1080	41	3.0	1.6
24	8.2	12	1.9	.15	0	1.8	343	49	772	40	3.5	1.6
25	7.2	11	1.7	.15	0	1.7	287	41	651	51	4.0	2.1
26	6.5	10	1.6	.14	0	1.5	252	34	552	42	4.4	3.5
27	7.0	9.1	1.4	.13	0	1.4	263	28	503	30	4.6	3.4
28	7.6	8.5	1.3	.13	0	1.3	241	22	535	25	3.8	2.6
29	7.6	7.7	1.2	.12	---	1.2	251	21	1920	20	2.5	1.9
30	8.0	7.1	1.1	.12	---	1.2	243	17	6150	16	1.5	.88
31	8.0	---	1.0	.11	---	1.1	---	15	---	13	2.5	---
TOTAL	208.68	457.1	103.5	10.19	.81	19.12	11866.3	2206	15470.6	34484	199.5	49.88
MEAN	6.73	15.2	3.34	.33	.029	.62	396	71.2	516	1112	6.44	1.66
MAX	12	32	6.5	.90	.11	2.0	1410	227	6150	8200	22	6.9
MIN	.15	7.1	1.0	.11	0	0	1.0	15	4.9	13	1.5	.04
AC-FT	414	907	205	20	1.6	38	23540	4380	30690	68400	396	99

CAL YR 1974 TOTAL 12290.81 MEAN 33.7 MAX 1300 MIN .05 AC-FT 24380
WTR YR 1975 TOTAL 65078.08 MEAN 178 MAX 8200 MIN 0 AC-FT 129100

05062000 Buffalo River near Dilworth, Minn.

LOCATION.--Lat 46°57'40", long 96°39'40", in SW¼SE¼ sec.6, T.140 N., R.47 W., Clay County, on left bank 4.5 mi (7.2 km) southeast of Kragnes, 6.5 mi (10.5 km) northeast of Dilworth, and 9 mi (14 km) downstream from South Branch.

DRAINAGE AREA.--1,040 mi² (2,690 km²), approximately.

PERIOD OF RECORD.--March 1931 to current year. Monthly discharge only for some periods, published in WSP 1308.

GAGE.--Water-stage recorder. Datum of gage is 878.31 ft (267.71 m) above mean sea level, datum of 1929 (levels by Corps of Engineers). Prior to Apr. 5, 1937, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--44 years, 131 ft³/s (3.710 m³/s), 94,910 acre-ft/yr (117 hm³/yr).

EXTREMES.--Current year: Maximum discharge, 13,600 ft³/s (385 m³/s) July 2 (gage height, 27.10 ft or 8.260 m); minimum daily, 18 ft³/s (0.51 m³/s) Jan. 23 to Feb. 10; minimum gage height, 3.04 ft (0.927 m) Oct. 1.
Period of record: Maximum discharge, 13,600 ft³/s (385 m³/s) July 2, 1975 (gage height, 27.10 ft or 8.260 m); no flow at times in 1936.

REMARKS.--Records good except those for winter periods, which are fair. Records of water-quality data for the current year are published in Section 2 of this report.

REVISIONS (WATER YEARS).--WSP 1308: 1931(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	41	29	23	18	21	30	994	148	11700	141	35
2	24	55	29	23	18	21	30	907	138	13500	155	33
3	24	76	29	23	18	21	30	824	130	13000	162	36
4	24	92	30	23	18	21	30	745	124	10900	166	46
5	26	96	30	23	18	21	30	665	123	7800	154	42
6	27	96	30	22	18	21	30	585	123	5180	141	39
7	30	88	30	22	18	21	30	515	125	3920	128	38
8	30	77	30	22	18	22	32	473	122	3030	115	37
9	36	69	30	22	18	22	36	446	115	2590	103	36
10	39	58	30	22	18	22	45	414	110	2310	92	34
11	40	48	29	21	19	22	80	385	108	2030	86	33
12	38	45	29	21	19	22	150	359	110	1740	80	31
13	37	42	28	21	19	23	260	337	114	1500	74	29
14	42	29	28	20	19	23	500	324	115	1280	69	27
15	46	31	28	20	19	23	1040	328	112	1080	66	25
16	46	30	28	20	19	24	1830	317	109	894	61	22
17	43	29	27	20	19	25	2460	301	107	741	57	21
18	38	35	27	19	19	27	2800	283	107	611	54	21
19	37	32	27	19	19	29	2620	270	112	493	51	22
20	38	34	26	19	20	31	2300	262	415	407	49	24
21	35	28	26	19	20	34	2060	274	877	333	46	26
22	30	31	26	19	20	37	1860	287	1140	304	43	32
23	30	36	26	18	20	39	1650	277	1490	281	43	34
24	32	31	25	18	20	38	1520	261	1960	261	44	32
25	32	28	25	18	20	37	1380	247	2030	246	46	31
26	31	28	25	18	20	35	1250	228	1910	233	42	31
27	29	28	25	18	20	33	1190	211	1830	215	38	33
28	28	28	24	18	20	32	1120	195	1910	192	36	31
29	28	28	24	18	---	31	1090	183	3030	170	35	32
30	29	29	24	18	---	30	1050	171	5310	149	34	29
31	32	---	24	18	---	30	---	159	---	135	35	---
TOTAL	1024	1398	848	625	531	838	28533	12227	24154	87225	2446	942
MEAN	33.0	46.6	27.4	20.2	19.0	27.0	951	394	805	2814	78.9	31.4
MAX	46	96	30	23	20	39	2800	994	5310	13500	166	46
MIN	23	28	24	18	18	21	30	159	107	135	34	21
AC-FT	2030	2770	1680	1240	1050	1660	56600	24250	47910	173000	4850	1870

CAL YR 1974 TOTAL 54402 MEAN 149 MAX 2080 MIN 17 AC-FT 107900
WTR YR 1975 TOTAL 160791 MEAN 441 MAX 13500 MIN 18 AC-FT 318900

05062500 Wild Rice River at Twin Valley, Minn.

LOCATION.--Lat 47°16'00", long 96°14'40", in NE¼ sec.27, T.144 N., R.44 W., Norman County, on left bank 100 ft (30 m) upstream from highway bridge, 0.8 mi (1.3 km) northeast of village of Twin Valley, and 2 mi (3 km) upstream from small tributary.

DRAINAGE AREA.--888 mi^2 (2,300 km^2).

PERIOD OF RECORD.--June 1909 to September 1917, July 1930 to current year. Monthly discharge only for some periods, published in WSP 1308.

GAGE.--Water-stage recorder. Datum of gage is 1,008.16 ft (307.29 m) above mean sea level, datum of 1929 (Corps of Engineers bench mark). June 1909 to September 1917, nonrecording gage at site 0.2 mi (0.3 km) downstream at different datum. July 23, 1930, to Nov. 24, 1934, nonrecording gage at highway bridge 100 ft (30 m) downstream from present site at present datum. Nov. 25, 1934, to Aug. 2, 1950, water-stage recorder 80 ft (24 m) upstream from present site at present datum.

AVERAGE DISCHARGE.--53 years, 177 ft^3/s (5.013 m^3/s), 128,200 acre-ft/yr (158 hm^3/yr).

EXTREMES.--Current year: Maximum discharge, 3,660 ft^3/s (104 m^3/s) July 1 (gage height, 11.29 ft or 3.441 m); minimum, 20 ft^3/s (0.57 m^3/s) Oct. 1 (gage height, 1.18 ft or 0.360 m).

Period of record: Maximum discharge, 9,200 ft^3/s (261 m^3/s) July 22, 1909 (gage height, 20.0 ft or 6.10 m, site and datum then in use), from rating curve extended above 3,300 ft^3/s (93.5 m^3/s); minimum, 0.5 ft^3/s (0.014 m^3/s) Nov. 4, 1939.

REMARKS.--Records good except those for winter period, which are fair. Records of water-quality data for the current year are published in Section 2 of this report. Flow slightly regulated by Rice Lake and many other small lakes above station.

REVISIONS (WATER YEARS).--WSP 955: 1941. WSP 1308: 1915(M), 1917(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	99	87	53	50	56	91	1590	315	3420	276	102
2	27	105	85	52	50	57	90	1530	289	3240	304	71
3	28	106	83	52	50	57	90	1460	280	3080	315	70
4	28	109	80	52	50	58	90	1370	268	2580	280	66
5	39	112	78	52	50	58	90	1290	272	2180	248	66
6	43	112	76	52	50	59	92	1220	264	1920	224	60
7	43	112	74	52	51	60	98	1150	264	1830	204	62
8	42	117	72	52	51	60	107	1070	238	1930	191	58
9	41	118	71	52	51	61	120	1020	231	1670	180	54
10	37	115	70	52	51	62	160	972	227	1470	172	51
11	39	117	69	52	51	63	250	918	226	1280	164	47
12	43	111	68	52	51	64	500	856	226	1150	154	43
13	51	100	67	52	52	65	800	802	231	1050	146	42
14	55	81	66	52	52	65	1040	771	222	975	140	39
15	52	62	65	52	52	66	1200	742	215	900	135	37
16	56	64	64	52	52	66	1300	721	220	830	129	35
17	58	83	63	52	52	67	1700	687	218	763	124	33
18	52	129	62	52	53	68	2690	654	204	698	118	35
19	55	148	61	51	53	70	2870	630	211	643	114	37
20	60	134	60	51	53	75	2490	609	505	596	108	38
21	65	134	59	51	54	90	2310	594	996	550	105	42
22	62	117	58	51	54	100	2190	599	1360	512	105	49
23	60	115	57	51	54	100	2060	596	1540	476	117	52
24	64	112	56	50	54	100	2020	570	1350	440	118	49
25	60	110	56	50	55	98	1930	555	1030	407	112	44
26	52	107	55	50	55	97	1860	524	975	377	102	41
27	52	103	55	50	55	96	1810	491	924	346	94	38
28	50	97	54	49	56	95	1770	452	875	322	88	38
29	51	94	54	49	---	94	1710	412	2690	289	80	39
30	52	91	53	50	---	93	1660	381	3000	260	74	35
31	55	---	53	50	---	92	---	348	---	246	74	---
TOTAL	1498	3214	2031	1590	1462	2312	35188	25584	19866	36430	4795	1477
MEAN	48.3	107	65.5	51.3	52.2	74.6	1173	825	662	1175	155	49.2
MAX	65	148	87	53	56	100	2870	1590	3000	3420	315	102
MIN	26	62	53	49	50	56	90	348	204	246	74	33
AC-FT	2970	6370	4030	3150	2900	4590	69800	50750	39400	72260	9510	2930

CAL YR 1974 TOTAL 113805 MEAN 312 MAX 3410 MIN 20 AC-FT 225700
WTR YR 1975 TOTAL 135447 MEAN 371 MAX 3420 MIN 26 AC-FT 268700

05064000 Wild Rice River at Hendrum, Minn.

LOCATION.--Lat 47°16'05", long 96°47'50", in SE¼ sec.19, T.144 N., R.48 W., Norman County, near center of span on downstream side of highway bridge, 0.5 mi (0.8 km) east of Hendrum and 4 mi (6.4 km) upstream from mouth.

DRAINAGE AREA.--1,600 mi^2 (4,140 km^2), approximately.

PERIOD OF RECORD.--March 1944 to current year.

GAGE.--Nonrecording gage and crest-stage gage. Datum of gage is 836.75 ft (255.03 m) above mean sea level, datum of 1929 (levels by Corps of Engineers).

AVERAGE DISCHARGE.--31 years, 266 ft^3/s (7.533 m^3/s), 192,700 acre-ft/yr (238 hm^3/yr).

EXTREMES.--Current year: Maximum discharge, 7,660 ft^3/s (217 m^3/s) July 5 (gage height, 30.91 ft or 9.421 m), backwater from Red River of the North; maximum gage height, 32.05 ft (9.769 m) July 9 (backwater from Red River of the North; minimum daily discharge, 33 ft^3/s (0.93 m^3/s) Oct. 3, 4.

Period of record: Maximum discharge, 8,300 ft^3/s (235 m^3/s) Apr. 15, 1969 (gage height, 31.42 ft or 9.577 m); maximum gage height, 32.05 ft (9.769 m) July 9, 1975 (backwater from Red River of the North); no flow some days in 1948-49.

REMARKS.--Records good except those for winter period, which are fair. Large part of high flow diverted into Marsh River basin at overflow section 3.5 mi (5.6 km) east of Ada. Another diversion into the Marsh River basin formed in 1947, 1.5 miles (2.4 km) southeast of Ada and diverted water at all stages 1947-51, after which it was closed except for a small regulated flow diverted for abatement of pollution from Ada sewage plant effluent. Amount of diversion not known.

REVISIONS (WATER YEARS).--WSP 1728: 1958.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	199	103	66	60	72	142	2990	416	4000	350	138
2	34	195	99	66	61	72	140	2700	382	4970	400	134
3	33	195	95	66	61	73	138	2460	360	6060	419	134
4	33	194	90	66	61	73	136	2200	349	7160	391	117
5	39	192	85	65	62	74	135	1990	339	7630	350	112
6	46	190	80	65	62	74	134	1760	323	7320	317	109
7	59	185	75	64	62	75	133	1570	328	6980	284	103
8	57	185	70	64	63	75	132	1350	316	6720	267	99
9	55	178	66	64	63	76	133	1260	294	6720	251	100
10	60	176	63	63	64	76	138	1200	292	6720	230	95
11	67	176	60	63	64	76	145	1150	283	5870	217	88
12	67	171	60	62	65	76	230	1110	281	4790	211	83
13	67	140	60	62	65	76	500	1060	279	3960	194	78
14	70	90	60	61	65	76	1100	1020	276	3210	191	73
15	79	93	60	60	66	76	1600	956	268	2550	188	67
16	79	99	60	60	66	76	2400	899	263	2030	183	67
17	79	134	61	60	66	77	3550	859	261	1660	175	66
18	79	129	61	60	67	81	4200	818	259	1380	169	66
19	79	170	62	60	67	87	4670	768	275	1130	164	65
20	79	178	63	59	68	98	5000	785	295	954	160	61
21	80	180	64	59	68	110	5230	764	556	782	158	57
22	80	180	65	59	68	123	4980	751	1450	605	153	53
23	80	181	65	59	69	134	4470	737	2030	580	150	70
24	80	165	65	59	69	142	4000	738	2400	568	148	68
25	80	150	65	59	70	148	3770	690	2630	510	147	66
26	80	140	65	59	71	150	3640	653	2400	475	148	60
27	83	130	65	60	71	150	3550	603	2040	435	136	65
28	74	115	65	60	72	148	3520	557	1880	405	125	60
29	74	111	65	60	---	147	3470	518	1960	378	125	54
30	74	107	66	60	---	146	3250	480	2930	347	120	54
31	81	---	66	60	---	144	---	445	---	320	110	---
TOTAL	2061	4728	2149	1910	1836	3081	64636	35841	26415	97219	6631	2462
MEAN	66.5	158	69.3	61.6	65.6	99.4	2155	1156	881	3136	214	82.1
MAX	83	199	103	66	72	150	5230	2990	2930	7630	419	138
MIN	33	90	60	59	60	72	132	445	259	320	110	53
AC-FT	4090	9380	4260	3790	3640	6110	128200	71090	52390	192800	13150	4880

CAL YR 1974 TOTAL 164593 MEAN 451 MAX 5210 MIN 26 AC-FT 326500
WTR YR 1975 TOTAL 248969 MEAN 682 MAX 7630 MIN 33 AC-FT 493800

05064500 RED RIVER OF THE NORTH AT HALSTAD, MINN.

LOCATION.--Lat 47°21'10", long 96°50'50", on line between secs.24 and 25, T.145 N., R.49 W., Traill County, on left bank on upstream side of highway bridge, 0.5 mi (0.8 km) west of Halstad, 2.5 mi (4.0 km) downstream from Wild Rice River, and at mile 375.2 (kilometre 603.7).

DRAINAGE AREA.--21,800 mi² (56,500 km²), approximately, includes 3,800 mi² (9,840 km²) in closed basins.

PERIOD OF RECORD.--April 1936 to June 1937 (no winter records), April 1942 to September 1960 (spring and summer months only), May 1961 to current year.

GAGE.--Water-stage recorder. Datum of gage is 826.65 ft (251.963 m) above mean sea level. Prior to July 17, 1961, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--14 years, 1,955 ft³/s (55.37 m³/s), 1,416,000 acre-ft/yr (1.75 km³/yr); median of yearly mean discharges, 1,880 ft³/s (53.2 m³/s), 1,360,000 acre-ft/yr (1.7 km³/yr).

EXTREMES.--Current year: Maximum discharge, 39,900 ft³/s (1,130 m³/s) July 10, gage height, 38.55 ft (11.750 m), minimum, 170 ft³/s (4.81 m³/s) Jan. 18, gage height, 3.42 ft (1.042 m).

Period of record: Maximum discharge, 39,900 ft³/s (1,130 m³/s) July 10, 1975, gage height, 38.55 ft (11.750 m); minimum discharge observed, 5.4 ft³/s (0.15 m³/s) Oct. 8, 9, 12-14, 1936.

Flood in 1897 reached a stage of about 38.5 ft (11.73 m).

REMARKS.--Records good. Some regulation by many controlled lakes and reservoirs on tributaries. Records of chemical analyses for the water year 1975 are published in Section 2 of this report.

REVISIONS (WATER YEARS).--WSP 1388: 1936, 1950. WSP 1728: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	376	631	455	351	411	461	1020	18400	2540	16400	2360	980
2	399	779	480	357	425	461	970	17200	2420	18800	2510	950
3	425	951	535	360	402	464	900	15900	2310	22400	2460	920
4	428	886	532	357	405	477	850	14000	2220	27600	2290	900
5	454	801	493	354	408	486	850	11700	2180	32900	2140	880
6	486	783	454	354	421	496	870	9500	2120	36400	2010	850
7	522	783	415	351	425	499	900	8320	2060	38200	1860	830
8	499	751	399	365	428	512	920	6700	2110	39100	1730	812
9	461	729	376	345	421	522	950	6090	1970	39700	1640	808
10	421	722	357	340	421	532	1050	5670	1940	39900	1570	801
11	411	702	351	335	425	539	1120	5360	1910	38400	1510	790
12	395	680	330	325	438	549	1800	5100	1880	36200	1470	776
13	418	663	305	300	451	566	3500	4800	1870	34200	1430	758
14	496	607	297	300	467	576	5300	4450	1870	31800	1400	744
15	552	499	320	300	461	579	8300	4120	1840	29000	1350	730
16	562	470	357	245	464	579	11200	3900	1780	26400	1310	719
17	562	468	379	190	467	583	15000	3750	1740	23500	1290	709
18	552	465	386	174	470	593	20800	3660	1730	20400	1280	712
19	552	465	383	192	470	628	24800	3570	1680	16700	1230	719
20	552	464	373	326	480	691	24800	3600	1880	12600	1220	747
21	529	519	363	360	473	816	24100	3720	3430	8300	1200	719
22	522	583	351	370	473	992	23000	3700	6100	5200	1190	659
23	522	499	351	370	467	1090	22900	3620	7900	3960	1180	642
24	512	483	360	368	457	1120	22300	3570	9200	3620	1170	649
25	516	475	373	367	457	1160	21600	3460	10900	3400	1150	659
26	499	472	379	360	464	1150	20700	3360	11600	3200	1120	656
27	493	470	383	354	461	1110	19800	3250	11700	3050	1100	652
28	489	468	370	351	457	1080	19300	3090	11500	2900	1070	642
29	486	462	360	357	---	1050	19000	2960	11600	2720	1050	649
30	489	455	354	363	---	1050	18900	2830	13600	2560	1030	670
31	502	---	360	389	---	1040	---	2690	---	2440	1000	---
TOTAL	15082	18185	11981	10210	12469	22451	337500	192040	137480	621950	46320	22732
MEAN	487	606	386	329	445	724	11250	6195	4583	20060	1494	758
MAX	562	951	535	389	480	1160	24800	18400	13600	39900	2510	980
MIN	376	455	297	174	402	461	850	2690	1680	2440	1000	642
AC-FT	29920	36070	23760	20250	24730	44530	669400	380900	272700	1234000	91880	45090

CAL YR 1974 TOTAL 675328 MEAN 1850 MAX 16400 MIN 275 AC-FT 1340000
WTR YR 1975 TOTAL 1448400 MEAN 3968 MAX 39900 MIN 174 AC-FT 2873000

05067500 Marsh River near Shelly, Minn.

LOCATION.--Lat 47°24'45", long 96°45'50", in NE¼NW¼ sec.3, T.145 N., R.48 W., Norman County, near center of span on downstream truss of bridge, 3.8 mi (6.1 km) southeast of Shelly and 10 mi (16 km) upstream from mouth.

DRAINAGE AREA.--151 mi² (391 km²).

PERIOD OF RECORD.--March 1944 to current year. Monthly discharge only for March 1944, published in WSP 1308.

GAGE.--Nonrecording gage and crest-stage gage. Datum of gage is 841.14 ft (356.38 m) above mean sea level, datum of 1929 (levels by Corps of Engineers). Prior to Oct. 1, 1965, nonrecording gage at datum 3.0 ft (0.9 m) higher.

AVERAGE DISCHARGE.--31 years, 73.7 ft³/s (2.087 m³/s), 53,400 acre-ft/yr (65.8 hm³/yr).

EXTREMES.--Current year: Maximum discharge, 2,330 ft³/s (66.0 m³/s) Apr. 19 (gage height, 17.31 ft or 5.428 m), backwater from ice; no flow for many days.
Period of record: Maximum discharge, 4,660 ft³/s (132 m³/s) May 11, 1950 (gage height, 21.96 ft or 6.693 m), from floodmark, present datum; no flow for many days most years.

REMARKS.--Records fair. Large part of high flow of Wild Rice River diverted into Marsh River basin at overflow section 4.6 mi (5.6 km) east of Ada. Another diversion from Wild Rice River basin formed in 1947, 1.5 miles (2.4 km) southeast of Ada and diverted water at all stages 1947-51, after which it was closed except for a small regulated flow diverted for abatement of pollution from Ada sewage plant effluent.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	8.7	1.6	.31	.17	.06	.20	760	8.0	722	4.0	.04
2	0	9.3	1.4	.30	.16	.06	.20	399	6.4	1090	4.0	.02
3	0	14	1.2	.30	.16	.05	.20	255	5.6	1160	4.0	.03
4	1.5	18	1.0	.29	.16	.05	.20	213	5.1	1110	3.2	.04
5	.40	14	.92	.29	.15	.04	.20	160	4.5	943	2.5	.03
6	0	13	.82	.28	.15	.04	.20	117	5.1	464	1.8	.02
7	0	9.3	.76	.27	.14	.03	.21	82	6.0	175	1.2	.02
8	0	7.4	.68	.27	.14	.03	.22	60	5.8	96	.90	.02
9	0	7.0	.63	.26	.14	.03	.23	50	5.3	115	.82	.02
10	0	6.3	.59	.26	.13	.03	.27	48	5.1	136	.74	.01
11	0	5.6	.56	.25	.13	.03	1.2	48	4.3	155	.58	.01
12	0	4.5	.54	.25	.13	.03	5.0	42	4.5	167	.50	.01
13	0	4.0	.52	.24	.12	.03	30	34	4.7	146	.42	0
14	0	4.0	.50	.24	.12	.04	140	32	4.3	132	.34	0
15	0	3.9	.48	.24	.12	.05	350	34	4.1	116	.34	0
16	0	3.7	.46	.23	.12	.08	885	36	3.9	97	.34	0
17	0	4.1	.45	.23	.11	.10	1230	31	3.9	80	.28	0
18	0	4.5	.44	.22	.11	.11	1730	29	3.3	60	.22	0
19	0	4.9	.43	.22	.11	.15	2250	26	3.0	35	.22	.01
20	1.0	4.7	.42	.21	.11	.20	2060	27	3.3	26	.16	0
21	.50	5.3	.41	.21	.10	.25	1460	26	4.7	22	.16	0
22	.01	5.8	.40	.21	.10	.30	1050	25	6.4	19	.10	0
23	.02	6.0	.39	.20	.10	.29	701	24	14	15	.10	0
24	.22	5.2	.38	.20	.09	.27	492	21	18	12	.16	0
25	1.4	4.3	.37	.20	.09	.26	406	18	43	8.0	.16	0
26	.28	3.4	.36	.19	.08	.25	341	16	44	5.8	.10	0
27	.42	2.9	.35	.19	.08	.24	435	14	46	3.7	.10	0
28	.34	2.6	.34	.19	.07	.23	806	12	40	3.1	.04	0
29	.34	2.2	.33	.18	---	.22	1110	11	49	3.1	.03	0
30	.34	1.8	.33	.18	---	.21	1100	9.3	149	2.6	.02	0
31	.42	---	.32	.17	---	.20	---	8.2	---	2.6	.02	---
TOTAL	7.19	190.4	18.38	7.28	3.39	3.96	16584.33	2667.5	510.3	7131.9	27.55	.28
MEAN	.23	6.35	.59	.23	.12	.13	553	86.0	17.0	230	.89	.009
MAX	1.5	18	1.6	.31	.17	.30	2250	760	149	1160	4.0	.04
MIN	0	1.8	.32	.17	.07	.03	.20	8.2	3.0	2.6	.02	0
AC-FT	14	378	36	14	6.7	7.9	32900	5290	1010	14150	55	.6

CAL YR 1974 TOTAL 28918.34 MEAN 79.2 MAX 2410 MIN 0 AC-FT 57360
WTR YR 1975 TOTAL 27152.46 MEAN 74.4 MAX 2250 MIN 0 AC-FT 53860

NOTE.--No gage-height record Jan. 10 to Mar. 16.

05069000 Sand Hill River at Climax, Minn.

LOCATION.--Lat 47°36'43", long 96°48'52", in NE¼NE¼ sec.30, T.148 N., R.48 W., Polk County, near center of span on downstream side of bridge on U.S. Highway 75 in Climax and 3.7 mi (6.0 km) upstream from mouth.

PERIOD OF RECORD.--March 1943 to current year (winter records incomplete in some years). Monthly discharge only for some periods, published in WSP 1308 and 1728.

GAGE.--Nonrecording gage and crest-stage gage. Datum of gage is 820.10 ft (249.97 m) above mean sea level, datum of 1929 (levels by Corps of Engineers). Prior to Oct. 1, 1966, nonrecording gage at site 3.2 mi (5.1 km) upstream at datum 12.78 ft (3.90 m) higher.

AVERAGE DISCHARGE.--29 years (1946-75), 71.8 ft³/s (2.033 m³/s), 52,020 acre-ft/yr (64.1 hm³/yr).

EXTREMES.--Current year: Maximum discharge, 2,550 ft³/s (72.2 m³/s) Apr. 20 (gage height, 19.24 ft or 5.864 m, backwater from ice); maximum gage height, 24.84 ft (7.571 m) July 11, backwater from the Red River of the North; minimum daily discharge, 9.6 ft³/s (0.27 m³/s) Oct. 13.

Period of record: Maximum discharge, 4,560 ft³/s (129 m³/s) Apr. 14, 1965 (gage height, 17.81 ft or 5.428 m, site and datum then in use); maximum gage height, 28.32 ft (8.632 m) Apr. 17, 1969 (from floodmark, backwater from Red River of the North); minimum discharge not determined.

REMARKS.--Records poor.

REVISIONS (WATER YEARS).--WSP 1388: 1943(M), 1944, 1947(M). WSP 1728: 1951(M), 1960 (Average discharge).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	36	21	15	11	18	30	830	74	230	60	22
2	13	41	20	14	11	18	30	600	56	245	59	22
3	17	49	20	14	11	18	31	520	52	285	57	21
4	15	49	20	14	11	19	31	455	48	280	52	21
5	19	49	20	14	12	19	31	390	45	275	50	20
6	11	50	20	14	12	19	31	340	42	265	46	20
7	11	51	20	14	12	20	31	300	40	275	44	19
8	13	53	19	13	12	20	32	262	38	345	43	19
9	17	51	18	13	12	21	33	240	36	360	43	18
10	14	42	17	13	13	21	35	220	35	330	43	18
11	13	43	17	13	13	22	39	194	34	305	43	17
12	15	28	16	12	13	22	50	180	33	280	38	17
13	9.6	28	16	12	13	22	80	170	33	250	36	16
14	12	30	15	12	13	22	150	161	32	230	32	16
15	12	26	15	12	13	22	250	159	32	205	31	15
16	19	25	15	12	14	23	400	157	31	175	31	15
17	20	26	15	12	14	23	900	154	31	160	31	15
18	20	26	16	11	14	23	1770	126	30	140	28	15
19	21	26	16	11	15	23	2420	126	30	125	27	15
20	19	27	16	11	15	24	2470	130	38	110	26	16
21	19	27	16	11	15	24	2140	131	53	100	26	18
22	24	28	16	11	16	25	1660	126	68	87	26	19
23	21	28	16	10	16	26	1180	112	80	74	26	19
24	26	28	16	10	16	27	880	113	74	71	26	20
25	27	28	16	10	16	28	960	99	62	68	26	21
26	16	27	16	10	17	29	1220	96	51	67	25	21
27	32	26	16	10	17	29	1520	89	41	65	25	21
28	28	25	16	10	17	30	1710	91	32	64	24	21
29	25	23	16	10	---	30	1460	87	32	62	24	21
30	22	22	15	11	---	30	1110	95	185	61	23	21
31	32	---	15	11	---	30	---	93	---	61	23	---
TOTAL	574.6	1018	526	370	384	727	22684	6846	1468	5650	1094	559
MEAN	18.5	33.9	17.0	11.9	13.7	23.5	756	221	48.9	182	35.3	18.6
MAX	32	53	21	15	17	30	2470	830	185	360	60	22
MIN	9.6	22	15	10	11	18	30	87	30	61	23	15
AC-FT	1140	2020	1040	734	762	1440	44990	13580	2910	11210	2170	1110

CAL YR 1974 TOTAL 38991.9 MEAN 107 MAX 1890 MIN 7.6 AC-FT 77340
WTR YR 1975 TOTAL 41900.6 MEAN 115 MAX 2470 MIN 9.6 AC-FT 83110

05074000 Lower Red Lake near Red Lake, Minn.

LOCATION.--Lat 47°57'27", long 95°16'34", in NW¼ sec.28, T.152 N., R.36 W., Clearwater County, on left bank just upstream from dam at outlet, 13 mi (21 km) northwest of village of Red Lake.

DRAINAGE AREA.--1,950 mi^2 (5,050 km^2), approximately.

PERIOD OF RECORD.--June 1930 to November 1932 (published as Red Lake at Redby), May 1933 to current year (published as Red Lake near Red Lake 1933-40); records on Upper Red Lake published as Red Lake at Waskish, April 1930 to September 1933, all in reports of Geological Survey. October 1921 to September 1929 gage heights at Redby and on Upper Red Lake at Waskish in files of Minnesota Department of Conservation (fragmentary).

GAGE.--Water-stage recorder. Datum of gage is 1,169.00 ft (356.311 m) above mean sea level, adjustment of 1912 (levels by Corps of Engineers). May 1933 to Sept. 6, 1934, staff gage at same site and datum. Staff gages at Waskish and Redby at datum 69.00 ft (21.031 m) lower.

EXTREMES.--Current year: Maximum daily gage height, 8.03 ft (2.448 m) July 11; minimum daily, 5.26 ft (1.603 m) Nov. 14.

Period of record: Maximum gage height, 9.53 ft (2.905 m) June 25, 1950; minimum recorded, 0.80 ft (0.244 m) Nov. 20, 1936.

REMARKS.--Water level subject to fluctuation caused by change in direction and velocity of wind and by seiches.

MONTHEND GAGE HEIGHT, IN FEET, OCTOBER 1974 TO SEPTEMBER 1975

Oct. 31	5.52	Feb. 28	5.33	June 30	7.11
Nov. 30	5.52	Mar. 31	5.42	July 31	7.51
Dec. 31	5.40	Apr. 30	6.39	Aug. 31	7.04
Jan. 31	5.45	May 31	6.85	Sept.30	6.37

NOTE.--Mean daily gage heights are available.

05074500 Red Lake River near Red Lake, Minn.

LOCATION.--Lat 47°57'27", long 95°16'35", in NW¼ sec.28, T.152 N., R.36 W., Clearwater County, on left bank 50 ft (15 m) downstream from dam at outlet of Lower Red Lake and 13 mi (21 km) northwest of village of Red Lake.

DRAINAGE AREA.--1,950 mi² (5,050 km²), approximately.

PERIOD OF RECORD.--May 1933 to current year. Monthly discharge only for May 1933, published in WSP 1308.

GAGE.--Water-stage recorder. Datum of gage is 1,167.00 ft (355.702 m) above mean sea level, adjustment of 1912 (levels by Corps of Engineers). Prior to Sept. 7, 1934, nonrecording gage at site 50 ft (15 m) upstream at datum 2.00 ft (0.610 m) higher. Sept. 7, 1934, to Nov. 26, 1951, water-stage recorder at present site at datum 2.00 ft (0.610 m) higher.

AVERAGE DISCHARGE.--42 years, 485 ft³/s (13.74 m³/s), 351,400 acre-ft/yr (433 hm³/yr).

EXTREMES.--Current year: Maximum daily discharge, 1,660 ft³/s (47.0 m³/s) July 29, 30; maximum gage height, 8.07 ft (2.459 m), affected by seiches and backwater from aquatic vegetation; minimum daily discharge, 106 ft³/s (3.00 m³/s) Apr. 28.
Period of record: Maximum discharge, 3,600 ft³/s (102 m³/s) June 25, 1950 (gage height, 11.19 ft or 3.411 m, affected by seiches and backwater from aquatic vegetation, present datum), from rating curve extended above 1,400 ft³/s (39.6 m³/s); no flow at times.

REMARKS.--Records fair. Flow completely regulated by outlet dam on Lower Red Lake.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1120	1380	859	859	730	695	598	140	1020	210	1610	1340
2	1110	1380	850	858	730	695	592	198	1020	207	1600	1420
3	1100	1350	800	852	725	690	588	345	1080	212	1600	1440
4	1200	1330	794	841	725	690	548	305	1220	259	1600	1440
5	1430	1320	778	837	725	685	532	409	1280	243	1600	1460
6	1360	1320	798	874	725	685	448	553	1280	235	1600	1460
7	1380	1200	878	828	725	685	388	553	1300	235	1580	1460
8	1380	1110	919	804	725	680	498	540	1320	241	1580	1470
9	1360	1080	911	770	725	680	488	569	1350	205	1570	1460
10	1480	1070	900	774	725	675	512	618	1380	175	1560	1480
11	1360	1070	885	765	725	670	515	712	1400	164	1560	1480
12	1360	1070	841	760	720	670	525	727	1420	157	1560	1470
13	1470	1080	834	755	720	670	525	745	1440	158	1560	1460
14	1490	1080	904	750	715	665	404	756	1470	212	1550	1470
15	1380	1020	904	745	710	660	284	746	1500	342	1580	1470
16	1370	953	882	745	710	660	291	745	1520	490	1590	1460
17	1360	938	863	740	710	650	312	859	1500	730	1590	1470
18	1360	923	852	745	705	620	348	1080	1500	893	1580	1460
19	1360	912	858	755	705	580	363	1100	1500	1070	1600	1500
20	1340	912	848	745	700	550	357	1080	1540	1180	1600	1520
21	1440	934	841	745	700	500	354	992	1550	1310	1600	1520
22	1360	867	850	735	700	500	351	972	1560	1480	1590	1500
23	1340	793	850	740	700	570	345	988	1540	1520	1600	1500
24	1350	929	850	740	700	635	428	976	1540	1560	1600	1500
25	1340	950	850	733	700	645	363	984	1530	1580	1540	1500
26	1340	950	850	740	695	630	148	994	1530	1600	1420	1490
27	1340	940	850	730	695	630	124	992	1510	1640	1020	1500
28	1330	910	859	750	695	625	106	994	1480	1650	684	1500
29	1330	950	848	730	---	620	121	1010	1010	1660	687	1500
30	1330	900	860	730	---	615	140	1010	331	1660	863	1520
31	1340	---	867	730	---	608	---	1010	---	1630	1110	---
TOTAL	41130	31591	26518	23794	19965	19821	11749	23674	40621	24892	45384	44260
MEAN	1327	1053	855	768	713	639	392	764	1354	803	1464	1475
MAX	1490	1380	919	874	730	695	598	1100	1560	1660	1610	1520
MIN	1100	793	778	730	695	500	106	140	331	157	684	1340
AC-FT	81580	62660	52600	47200	39600	39310	23300	46960	80570	49370	90020	87790

CAL YR 1974 TOTAL 348492 MEAN 955 MAX 1490 MIN 73 AC-FT 691200
WTR YR 1975 TOTAL 353399 MEAN 968 MAX 1660 MIN 106 AC-FT 701000

05075000 Red Lake River at High Landing, near Goodridge, Minn.

LOCATION.--Lat 48°02'34", long 95°48'28", on line between secs. 28 and 29, T.153 N., R.40 W., Pennington County, on left bank 50 ft (15 m) upstream from highway bridge at High Landing, 7 mi (11 km) south of Goodridge and 33 mi (53 km) upstream from Thief River.

DRAINAGE AREA.--2,300 mi^2 (5,957 km^2), approximately.

PERIOD OF RECORD.--September 1929 to current year. Prior to October 1930, published as "at Kratka".

GAGE.--Water-stage recorder. Datum of gage is 1,141.57 ft (347.951 m) above mean sea level, adjustment of 1912 (levels by Corps of Engineers). See WSP 1308 or 1738 for history of changes prior to Oct. 1, 1949.

AVERAGE DISCHARGE.--46 years, 533 ft^3/s (15.09 m^3/s), 386,200 acre-ft/yr (476 hm^3/yr).

EXTREMES.--Current year: Maximum discharge, 4,060 ft^3/s (115 m^3/s) July 7 (gage height, 13.39 ft or 4.081 m); maximum gage height, 13.44 ft (4.097 m) July 3; minimum daily discharge, 650 ft^3/s (18.4 m^3/s) Apr. 5; minimum gage height, 5.12 ft (1.561 m) Nov. 24, 25.

Period of record: Maximum discharge, 4,060 ft^3/s (115 m^3/s) July 7, 1975 (gage height, 13.39 ft or 4.081 m); maximum gage height, 13.44 ft (4.097 m) July 3, 1975; no flow during infrequent periods in 1931-34, 1936-37.

REMARKS.--Records good except those for winter period, which are fair. Flow regulated by outlet dam on Lower Red Lake.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1180	1420	1000	900	740	720	656	1480	1280	2050	1720	985
2	1180	1450	990	900	740	720	655	1410	1260	3150	1720	1190
3	1190	1440	980	900	740	710	654	1480	1260	3500	1670	1350
4	1170	1420	960	890	739	710	652	1540	1290	3650	1630	1410
5	1220	1420	950	880	738	710	650	1460	1390	3750	1590	1460
6	1300	1410	930	880	737	710	660	1430	1410	3900	1570	1500
7	1380	1420	920	870	736	710	670	1440	1450	4040	1560	1520
8	1430	1400	910	860	735	710	675	1350	1470	4030	1530	1540
9	1460	1300	900	850	734	700	680	1280	1490	3970	1510	1580
10	1470	1240	900	830	733	700	700	1220	1530	3670	1490	1600
11	1470	1200	900	810	732	700	750	1280	1530	3790	1480	1600
12	1470	1170	900	790	731	700	830	1310	1510	3480	1480	1600
13	1470	1150	900	770	730	700	920	1310	1500	3070	1460	1600
14	1460	1140	900	760	725	700	1030	1340	1510	2530	1470	1610
15	1470	1170	900	740	725	700	1200	1380	1500	2040	1490	1600
16	1460	1140	900	740	725	700	1400	1350	1490	1770	1500	1600
17	1440	1050	900	740	720	700	1650	1310	1470	1590	1510	1620
18	1440	1020	900	740	720	700	1780	1350	1470	1520	1510	1650
19	1440	1010	900	740	720	695	1850	1520	1470	1560	1520	1640
20	1440	985	900	740	720	690	1820	1600	1550	1500	1530	1690
21	1440	1010	900	740	720	685	1720	1600	1640	1510	1550	1710
22	1420	1120	900	740	720	685	1670	1520	1700	1530	1550	1710
23	1420	926	900	740	720	680	1860	1470	1690	1590	1570	1710
24	1410	782	900	740	720	680	1930	1460	1660	1640	1570	1700
25	1400	812	900	740	720	675	1960	1420	1650	1670	1560	1700
26	1400	840	900	740	720	675	1760	1380	1610	1700	1550	1700
27	1400	920	900	740	720	670	1490	1360	1600	1710	1510	1700
28	1390	980	900	740	720	665	1480	1360	1640	1710	1370	1700
29	1400	1030	900	740	---	660	1560	1350	2150	1700	1110	1700
30	1400	1020	900	740	---	660	1560	1300	2190	1690	844	1700
31	1390	---	900	740	---	657	---	1240	---	1680	696	---
TOTAL	43010	34395	28340	24470	20380	21477	36872	43320	46360	76700	45820	47375
MEAN	1387	1147	914	789	728	693	1229	1397	1545	2474	1478	1579
MAX	1470	1450	1000	900	740	720	1960	1600	2190	4040	1720	1710
MIN	1170	782	900	740	720	657	650	1220	1260	1500	696	985
AC-FT	85310	68220	56210	48540	40420	42600	73140	85930	91960	152100	90880	93970

CAL YR 1974 TOTAL 443634 MEAN 1215 MAX 2600 MIN 782 AC-FT 879900
WTR YR 1975 TOTAL 468519 MEAN 1284 MAX 4040 MIN 650 AC-FT 929300

05076000 Thief River near Thief River Falls, Minn.

LOCATION.--Lat 48°11'08", long 96°10'11", in NW¼SW¼ sec.3, T.154 N., R.43 W., Marshall County, on right bank, 0.2 mi (0.3 km) upstream from highway bridge, 5 mi (8 km) north of city of Thief River Falls, 7 mi (11 km) upstream from mouth, and 9 mi (14 km) downstream from Mud Lake National Wild Life Refuge.

DRAINAGE AREA.--959 mi² (2,480 km²).

PERIOD OF RECORD.--July 1909 to September 1917, April 1920 to September 1921, October 1922 to September 1924, October 1928 to current year. Monthly discharge only for some periods, annual maximums for water years 1919, 1922, 1925, 1926, published in WSP 1308.

GAGE.--Water-stage recorder and control of grouted boulders. Datum of gage is 1,112.33 ft (339.04 m) above mean sea level, datum of 1929 (levels by Minnesota Highway Department). Prior to May 4, 1939, nonrecording gages at same site and datum.

AVERAGE DISCHARGE.--58 years, 161 ft³/s (4.560 m³/s), 116,600 acre-ft/yr (144 hm³/yr).

EXTREMES.--Current year: Maximum discharge, 3,260 ft³/s (92.3 m³/s) July 2 (gage height, 14.17 ft or 4.319 m); minimum, 1.1 ft³/s (0.031 m³/s) Jan. 13 (gage height, 4.26 ft or 1.298 m).
Period of record: Maximum discharge, 5,610 ft³/s (159 m³/s) May 13, 1950 (gage height, 17.38 ft or 5.297 m); no flow at times in some years.

REMARKS.--Records good except those for winter period, which are fair. Some regulation by Thief and Mud Lakes.

REVISIONS (WATER YEARS).--WSP 925: Drainage area. WSP 1308: 1917(M), 1924(M), 1929(M), 1931-33(M), 1935(M), 1937(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	170	5.3	2.4	2.1	2.2	40	2570	399	524	386	251
2	17	176	4.4	2.2	2.3	2.1	38	2600	392	3070	380	129
3	17	174	3.6	2.9	2.3	1.9	38	2410	384	3000	251	85
4	17	182	3.4	2.9	2.3	1.8	37	2350	383	2980	176	187
5	20	221	2.9	2.4	2.2	1.8	36	2280	377	2970	164	260
6	20	241	2.9	2.7	2.2	1.9	36	2200	236	2940	162	285
7	19	269	2.7	2.9	2.2	1.9	36	2020	206	3000	153	253
8	21	273	1.9	3.6	2.2	2.1	36	1910	198	3000	69	247
9	23	272	1.5	3.6	2.2	1.9	36	1800	162	3000	28	240
10	23	272	1.5	3.6	2.1	1.8	35	1690	138	3010	26	176
11	22	263	2.7	3.2	2.1	1.8	36	1630	162	3020	23	163
12	22	216	5.6	2.9	2.1	1.6	39	1570	180	3030	25	166
13	20	137	4.7	1.4	2.2	1.8	110	1490	193	3020	24	163
14	22	150	3.6	1.5	2.2	1.8	220	1450	191	2980	20	152
15	21	136	4.4	1.9	2.4	1.8	530	1410	184	2920	19	58
16	69	134	4.2	2.2	2.4	1.9	800	1370	185	2860	17	21
17	76	132	3.8	2.4	2.7	2.2	980	1290	183	2770	16	19
18	75	130	3.4	2.4	2.7	3.0	1290	1250	182	2620	16	20
19	78	130	3.3	2.5	2.7	6.0	1550	1160	174	2340	17	20
20	74	128	3.2	2.5	2.7	18	2020	700	240	2000	23	22
21	35	150	3.0	2.5	2.7	62	2440	557	567	1670	22	22
22	16	180	3.0	2.4	2.7	57	2520	495	718	1360	20	21
23	14	170	3.0	2.4	2.7	54	2590	484	748	1280	23	21
24	13	140	3.0	2.4	2.7	52	2650	480	727	1230	20	25
25	13	79	2.7	2.4	2.6	49	2600	471	720	1190	20	28
26	12	52	2.9	2.4	2.6	47	2590	449	500	1040	20	20
27	12	17	3.2	2.4	2.6	46	2560	417	438	739	22	25
28	12	11	3.2	2.3	2.6	44	2670	426	255	495	22	23
29	13	8.3	3.2	2.3	---	43	2740	417	155	426	18	23
30	158	6.8	2.9	2.3	---	42	2660	408	313	397	18	26
31	169	---	2.9	2.3	---	40	---	404	---	389	47	---
TOTAL	1137	4631.1	101.6	77.8	66.9	596.7	33923	40018	9941	65190	2225	3091
MEAN	36.7	154	3.28	2.51	2.39	19.2	1131	1291	331	2103	71.8	103
MAX	169	273	5.6	3.6	2.7	62	2740	2570	748	3070	386	285
MIN	12	6.8	1.5	1.4	2.1	1.6	35	404	138	389	16	19
AC-FT	2260	9190	202	154	133	1180	67290	79380	19720	129300	4410	6130

CAL YR 1974 TOTAL 123067.06 MEAN 337 MAX 2960 MIN .02 AC-FT 244100
WTR YR 1975 TOTAL 160999.10 MEAN 441 MAX 3070 MIN 1.4 AC-FT 319300

05077700 Ruffy Brook near Gonvick, Minn.

LOCATION.--Lat 47°44'50", long 95°24'45", on line between secs. 5 and 8, T.149 N., R.37 W., Clearwater County, on downstream side of bridge on County Highway 17, 4 mi (6.4 km) upstream from mouth, and 4.8 mi (7.7 km) east of Gonvick.

DRAINAGE AREA.--45.2 mi² (117 km²).

PERIOD OF RECORD.--April 1960 to current year. Monthly and daily figures for Apr. 1, 1960, to June 30, 1960, published in WSP 1913.

GAGE.--Nonrecording gage read once daily and crest-stage gage. Datum of gage is 1,227.93 ft (374.27 m) above mean sea level, adjustment of 1912 (levels by Corps of Engineers). Prior to Sept. 9, 1960, reference point at same site and datum.

AVERAGE DISCHARGE.--15 years, 14.9 ft³/s (0.422 m³/s), 10,800 acre-ft/yr (13.3 hm³/yr).

EXTREMES.--Current year: Maximum discharge, 364 ft³/s (10.3 m³/s) Apr. 17 (gage height, 5.74 ft or 1.750 m); minimum daily, 2.0 ft³/s (0.057 m³/s) Aug. 12, 13, 14.

Period of record: Maximum discharge, 453 ft³/s (12.8 m³/s) Mar. 30, 1967 (gage height, 6.35 ft or 1.935 m); maximum gage height, 6.62 ft (2.018 m) Apr. 9, 1969 (backwater from ice); no flow Feb. 20 to Mar. 6, 1968.

REMARKS.--Records good except those for winter periods, which are fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.4	9.0	3.9	3.3	3.7	4.2	7.6	84	7.7	84	6.3	2.4
2	2.4	9.9	3.9	3.2	3.7	4.2	7.5	75	6.8	230	6.3	2.5
3	2.4	8.3	3.9	3.2	3.7	4.2	7.4	69	6.8	144	4.8	2.4
4	2.3	6.8	3.8	3.2	3.8	4.2	7.4	71	7.1	86	4.5	2.3
5	5.3	6.1	3.8	3.2	3.8	4.2	7.4	58	10	101	3.7	2.6
6	5.0	5.5	3.8	3.1	3.9	4.2	7.4	50	9.6	72	3.4	2.4
7	4.8	5.3	3.8	3.1	4.0	4.2	7.5	42	9.3	53	3.2	2.8
8	4.3	5.3	3.8	3.1	4.0	4.2	7.5	35	8.0	64	3.2	3.0
9	3.7	5.3	3.8	3.1	4.0	4.2	7.6	29	9.6	51	3.0	5.8
10	3.4	6.3	3.8	3.1	4.1	4.2	7.8	26	9.9	42	2.6	6.6
11	3.0	5.5	3.8	3.2	4.1	4.2	9.0	23	9.9	34	2.1	8.3
12	2.6	5.0	3.8	3.2	4.2	4.2	11	20	9.9	30	2.0	8.0
13	2.6	4.1	3.8	3.2	4.3	4.2	18	17	11	30	2.0	7.4
14	3.0	4.1	3.7	3.2	4.3	4.2	30	26	11	24	2.0	7.7
15	3.0	4.1	3.7	3.2	4.3	4.2	55	23	10	19	2.1	7.4
16	3.0	4.1	3.7	3.2	4.3	4.3	215	18	9.9	15	2.3	8.0
17	3.0	4.0	3.6	3.3	4.2	4.5	328	16	9.0	13	2.1	7.4
18	3.2	4.0	3.6	3.3	4.2	5.0	284	15	8.3	12	2.1	8.0
19	3.2	4.0	3.6	3.3	4.2	5.6	172	14	7.4	11	2.1	9.3
20	3.0	4.0	3.6	3.4	4.2	6.5	130	13	26	9.6	2.1	12
21	3.0	4.0	3.6	3.4	4.2	7.5	129	14	24	8.6	2.1	11
22	3.0	4.0	3.6	3.4	4.1	8.0	126	12	22	7.4	2.1	9.9
23	3.0	4.0	3.6	3.4	4.1	8.4	178	14	17	6.5	3.4	7.7
24	3.0	4.0	3.6	3.5	4.1	8.6	185	12	14	6.0	3.2	7.4
25	3.0	4.0	3.5	3.5	4.2	8.3	160	12	13	5.5	2.6	7.1
26	3.0	3.9	3.5	3.5	4.2	8.3	141	11	13	5.5	2.4	7.1
27	2.8	3.9	3.4	3.6	4.2	8.2	127	10	12	5.3	2.4	6.8
28	2.8	3.9	3.4	3.6	4.2	8.1	110	9.3	13	4.3	2.8	6.8
29	3.2	3.9	3.4	3.6	---	8.0	107	8.6	40	3.9	2.8	6.8
30	3.2	3.9	3.4	3.6	---	7.6	98	8.3	49	3.7	2.8	6.3
31	3.2	---	3.3	3.7	---	7.7	---	7.7	---	3.4	2.4	---
TOTAL	98.8	150.2	113.5	102.9	114.3	177.6	2688.1	842.9	414.2	1184.6	90.9	193.2
MEAN	3.19	5.01	3.66	3.32	4.08	5.73	89.6	27.2	13.8	38.2	2.93	6.44
MAX	5.3	9.9	3.9	3.7	4.3	8.6	328	84	49	230	6.3	12
MIN	2.3	3.9	3.3	3.1	3.7	4.2	7.4	7.7	6.8	3.4	2.0	2.3
AC-FT	196	298	225	204	227	352	5330	1670	822	2350	180	383

CAL YR 1974 TOTAL 5566.0 MEAN 15.2 MAX 264 MIN 1.4 AC-FT 11040
WTR YR 1975 TOTAL 6171.2 MEAN 16.9 MAX 328 MIN 2.0 AC-FT 12240

PEAK DISCHARGE (BASE, 65 FT³/S)

DATE	TIME	G.HT	DISCHARGE	DATE	TIME	G.HT	DISCHARGE
4-17	2300	5.74	364	7-2	0800	4.78	269
4-23	2000	4.12	203				

05078000 Clearwater River at Plummer, Minn.

LOCATION.--Lat 47°55'24", long 96°02'46", in SE¼SW¼ sec.4, T.151 N., R.42 W., Red Lake County, on right bank 200 ft (61 m) downstream from Soo Line Railroad bridge, 300 ft (91 m) downstream from bridge on U.S. Highway 59, 0.9 mi (1.4 km) northwest of railroad depot in Plummer, and 8 mi (13 km) upstream from Hill River.

DRAINAGE AREA.--512 mi² (1,326 km²).

PERIOD OF RECORD.--April 1939 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,099.12 ft (335.012 m) above mean sea level, adjustment of 1912 (levels by Corps of Engineers). Prior to Nov. 10, 1939, nonrecording gage at site 100 ft (30 m) upstream at same datum.

AVERAGE DISCHARGE.--36 years, 183 ft³/s (5.183 m³/s), 132,600 acre-ft/yr (163 hm³/yr).

EXTREMES.--Current year: Maximum discharge, 2,960 ft³/s (83.8 m³/s) July 4 (gage height, 11.19 ft or 3.411 m); maximum gage height, 11.46 ft (3.493 m) Apr. 18 (backwater from ice); minimum discharge, 40 ft³/s (1.13 m³/s) Oct. 4 (gage height, 2.63 ft or 0.802 m).

Period of record: Maximum discharge, 3,640 ft³/s (103 m³/s) June 9, 1962 (gage height, 11.90 ft or 3.627 m); maximum gage height, 12.31 ft (3.752 m) Apr. 10, 1969 (backwater from ice); minimum discharge, 5.0 ft³/s (0.14 m³/s) July 5, 1973 (gage height, 1.97 ft or 0.600 m).

REMARKS.--Records good except those for winter periods, which are fair. Since 1968, undetermined amounts of water diverted for the flooding of wild rice paddies upstream.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49	76	91	82	71	62	79	1850	120	645	140	106
2	46	101	90	82	71	62	78	1670	106	1110	166	114
3	45	133	90	81	70	62	77	1510	83	2500	181	106
4	43	135	90	81	70	61	77	1520	96	2930	180	113
5	48	133	90	81	70	61	77	1600	101	2820	188	114
6	79	132	89	81	69	61	77	1440	113	2560	182	104
7	104	131	88	80	69	61	77	1150	131	2320	162	101
8	111	131	88	80	69	61	77	910	138	1960	156	100
9	110	132	88	80	68	61	78	722	126	1540	227	103
10	101	134	88	79	68	61	80	582	133	1200	229	95
11	95	130	88	79	68	61	90	498	156	941	215	88
12	94	125	88	78	67	61	120	441	164	746	173	91
13	88	117	88	78	66	61	260	334	182	614	143	98
14	87	87	87	77	66	61	580	295	201	519	154	92
15	92	86	87	77	66	62	980	354	183	430	164	81
16	98	97	87	77	65	65	1400	318	156	369	152	77
17	98	116	86	76	65	69	1750	294	157	310	167	76
18	93	113	86	76	65	73	2150	293	158	256	164	80
19	89	110	85	75	64	77	2120	266	162	240	164	78
20	84	111	85	75	64	82	2080	245	180	242	148	97
21	81	112	84	75	64	84	1950	216	325	216	142	124
22	78	112	84	74	64	85	2160	223	483	201	150	132
23	74	113	84	74	63	85	2400	211	488	197	155	125
24	71	108	84	73	63	84	2130	225	418	181	144	116
25	69	89	84	73	63	83	2120	207	357	173	143	107
26	69	80	84	73	63	83	2090	175	289	168	128	98
27	68	93	84	72	62	82	1970	134	275	165	134	90
28	68	94	83	72	62	81	1870	119	260	157	126	84
29	69	93	83	72	---	80	1900	101	312	142	114	84
30	70	92	82	72	---	80	1920	123	514	145	108	84
31	71	---	82	72	---	79	---	132	---	130	101	---
TOTAL	2442	3314	2677	2377	1855	2191	32817	18158	6567	26155	4900	2958
MEAN	78.8	110	86.4	76.7	66.3	70.7	1094	586	219	844	158	98.6
MAX	111	134	91	82	71	85	2400	1850	514	2930	229	132
MIN	43	76	82	72	62	61	77	101	83	130	101	76
AC-FT	4840	6570	5310	4710	3680	4350	65090	36020	13030	51880	9720	5870

CAL YR 1974 TOTAL 89049 MEAN 244 MAX 2440 MIN 34 AC-FT 176600
WTR YR 1975 TOTAL 106411 MEAN 292 MAX 2930 MIN 43 AC-FT 211100

PEAK DISCHARGE (BASE, 500 FT³/S)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
4-23	0300	10.31	2,530	7-4	0730	11.19	2,960
6-23	0200	5.19	502				

05078230 Lost River at Oklee, Minn.

LOCATION.--Lat 47°50'35", long 95°51'30", on west edge of sec.1, T.150 N., R.41 W., Red Lake County, on downstream side of bridge on State Highway 222 at northwest edge of Oklee, 12 mi (19 km) upstream from mouth.

DRAINAGE AREA.--266 mi² (689 km²).

PERIOD OF RECORD.--April 1960 to current year. Monthly and daily figures for Apr. 1, 1960, to June 30, 1960, published in WSP 2113.

GAGE.--Nonrecording gage and crest-stage gage. Datum of gage is 1,126.94 ft (343.391 m) above mean sea level, adjustment of 1912 (levels by Corps of Engineers). Prior to Sept. 9, 1960, reference points at same site at datum 8.00 ft (2.438 m) higher. Sept. 9, 1960, to Sept. 30, 1964, nonrecording gage at same site at datum 8.00 ft (2.438 m) higher.

AVERAGE DISCHARGE.--15 years, 85.7 ft³/s (2.427 m³/s), 62,090 acre-ft/yr (76.6 hm³/yr).

EXTREMES.--Current year: Maximum discharge, 2,120 ft³/s (60.0 m³/s) Apr. 19 (gage height, 14.66 ft or 4.468 m, backwater from ice); minimum daily, 3.9 ft³/s (0.11 m³/s) Sept. 15-18.

Period of record: Maximum discharge, 3,210 ft³/s (90.9 m³/s) Apr. 11, 1969 (gage height, 14.91 ft or 4.545 m, from floodmark); no flow Feb. 16 to Mar. 21, 1963, Feb. 15 to Mar. 2, 1964.

Maximum stage known since at least 1897, 18.39 ft (5.605 m) Apr. 21, 1950 (present datum), from floodmarks (discharge, 2,790 ft³/s or 79.0 m³/s).

REMARKS.--Records fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	46	20	16	14	16	25	723	34	295	26	5.3
2	16	55	20	16	14	16	25	622	32	1170	20	6.0
3	16	52	20	16	14	16	24	565	30	1650	18	5.1
4	17	57	20	16	14	16	24	676	31	1290	17	5.6
5	26	44	20	16	14	16	24	623	35	861	16	4.9
6	35	40	20	15	14	16	24	464	37	625	18	5.1
7	36	50	19	15	15	16	24	348	34	485	16	5.1
8	35	48	19	15	15	16	24	284	30	400	15	4.7
9	34	46	19	14	15	16	24	230	31	301	14	4.7
10	33	44	19	14	15	16	24	208	38	240	11	4.4
11	30	42	19	14	15	16	24	166	43	189	16	4.4
12	28	40	19	14	15	17	26	142	39	149	13	4.4
13	26	38	18	14	15	17	75	126	37	122	14	4.4
14	24	34	18	14	15	17	240	167	48	97	17	4.2
15	24	33	18	14	15	17	764	134	40	77	17	3.9
16	22	31	18	14	15	17	1250	144	32	69	14	3.9
17	22	28	18	14	15	18	1600	128	31	59	14	3.9
18	23	28	18	14	15	19	1990	112	28	51	16	3.9
19	24	28	18	14	15	20	2100	100	32	46	17	5.6
20	24	27	18	14	15	21	1900	91	111	43	18	6.2
21	23	27	17	14	15	25	1470	87	300	40	14	5.8
22	22	26	17	14	16	26	905	80	334	37	11	5.6
23	22	25	17	14	16	27	1230	85	223	34	14	7.5
24	22	24	17	14	16	28	1370	86	150	32	14	7.0
25	23	23	17	14	16	28	1120	80	103	30	11	7.7
26	24	23	17	14	16	28	805	56	86	29	9.8	6.2
27	22	22	17	14	16	27	758	49	84	26	8.1	5.8
28	23	22	17	14	16	26	736	50	67	24	8.6	5.6
29	23	21	16	14	---	26	842	47	104	22	7.5	4.9
30	24	21	16	14	---	26	874	41	191	21	6.4	4.7
31	22	---	16	14	---	25	---	37	---	20	6.2	---
TOTAL	759	1044	562	447	421	631	20321	6751	2405	8534	437.6	156.5
MEAN	24.5	34.8	18.1	14.4	15.0	20.4	677	218	80.2	275	14.1	5.22
MAX	36	57	20	16	16	28	2100	723	334	1650	26	7.7
MIN	14	21	16	14	14	16	24	37	28	20	6.2	3.9
AC-FT	1510	2070	1110	887	835	1250	40310	13390	4770	16930	868	310

CAL YR 1974 TOTAL 44178.1 MEAN 121 MAX 1930 MIN 4.7 AC-FT 87630
WTR YR 1975 TOTAL 42470.1 MEAN 116 MAX 2100 MIN 3.9 AC-FT 84240

05078500 Clearwater River at Red Lake Falls, Minn.

LOCATION.--Lat 47°53'15", long 96°16'25", in NW¼NE¼ sec.22, T.151 N., R.44 W., Red Lake County, on left bank 40 ft (12 m) downstream from Great Northern Railroad bridge in Red Lake Falls, 1.4 mi (2.3 km) upstream from mouth, and 3 mi (5 km) downstream from Badger Creek.

DRAINAGE AREA.--1,370 mi² (3,550 km²), approximately.

PERIOD OF RECORD.--June 1909 to September 1917, October 1934 to current year. Monthly discharge only for October, November, 1934, published in WSP 1308.

GAGE.--Water-stage recorder. Datum of gage is 949.49 ft (289.405 m) above mean sea level, adjustment of 1912 (levels by Corps of Engineers). Prior to Sept. 12, 1911, nonrecording gage at site 0.5 mi (0.8 km) upstream and Sept. 12, 1911, to Sept. 30, 1917, nonrecording gage at site 40 ft (12 m) upstream at different datum.

AVERAGE DISCHARGE.--49 years, 321 ft³/s (9.091 m³/s), 232,600 acre-ft/yr (287 hm³/yr).

EXTREMES.--Current year: Maximum discharge, 7,310 ft³/s (207 m³/s) Apr. 19 (gage height, 10.34 ft or 3.152 m); maximum gage height, 13.17 ft (4.014 m) Apr. 15 (backwater from ice); minimum daily discharge, 66 ft³/s (1.87 m³/s) Oct. 1.

Period of record: Maximum discharge, 9,740 ft³/s (276 m³/s) Apr. 12, 1969 (gage height, 11.82 ft or 3.603 m); maximum gage height observed, 17.5 ft (5.344 m) Apr. 15, 1913, site and datum then in use (backwater from ice); no flow Sept. 15, 1936, Sept. 14, 1939, Aug. 19-22, 1940.

REMARKS.--Records good except those for winter period and those for periods of no gage-height record, which are fair.

REVISIONS (WATER YEARS).--WSP 355: 1911-12. WSP 1438: 1910-11, 1917(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	66	128	107	112	103	101	162	4140	225	1440	216	117
2	69	170	113	112	103	101	161	3730	210	1970	225	119
3	74	204	113	112	102	101	159	3380	184	3640	273	123
4	86	207	114	112	102	100	157	3130	158	4990	239	119
5	123	205	114	112	102	100	155	3200	165	4730	216	126
6	159	204	113	112	102	100	153	3020	180	4170	245	126
7	150	203	111	112	102	100	151	2400	200	3660	216	117
8	138	203	111	112	102	100	150	1800	220	3120	202	115
9	132	201	111	112	101	99	149	1300	250	2540	208	115
10	129	200	110	112	101	99	149	1100	235	2010	260	115
11	123	193	109	112	101	98	205	1000	245	1500	245	108
12	119	182	109	112	101	98	360	900	265	1230	222	101
13	116	173	108	111	101	98	650	760	285	1020	188	103
14	117	160	109	110	101	97	1200	600	310	883	169	107
15	120	72	109	110	101	97	1970	680	335	763	183	101
16	128	115	109	110	101	97	3200	620	295	663	183	92
17	137	143	109	109	101	99	4780	570	280	588	176	89
18	139	148	109	109	101	103	6420	530	287	502	181	93
19	132	149	109	108	101	117	7010	500	290	442	178	93
20	128	148	109	107	101	132	6090	470	332	426	183	96
21	122	145	110	107	101	148	5310	440	597	392	174	105
22	120	140	110	106	101	160	4630	460	1450	347	162	127
23	116	135	110	106	101	170	4790	430	1420	335	178	133
24	113	130	110	105	101	170	4750	440	1110	316	166	125
25	111	122	110	105	101	170	4510	470	866	290	166	122
26	110	115	110	105	101	168	4550	390	712	276	155	120
27	110	107	111	104	101	168	4280	325	692	267	146	108
28	110	100	111	104	101	167	4230	260	663	260	150	102
29	110	98	111	104	---	165	4370	220	644	242	141	97
30	111	100	111	103	---	164	4360	193	988	225	134	93
31	114	---	111	103	---	163	---	200	---	222	126	---
TOTAL	3632	4600	3421	3370	2838	3850	79211	37658	14093	43459	5906	3307
MEAN	117	153	110	109	101	124	2640	1215	470	1402	191	110
MAX	159	207	114	112	103	170	7010	4140	1450	4990	273	133
MIN	66	72	107	103	101	97	149	193	158	222	126	89
AC-FT	7200	9120	6790	6680	5630	7640	157100	74690	27950	86200	11710	6560

CAL YR 1974 TOTAL 178192 MEAN 488 MAX 6560 MIN 56 AC-FT 353400
WTR YR 1975 TOTAL 205345 MEAN 563 MAX 7010 MIN 66 AC-FT 407300

NOTE.--No gage-height record Oct. 10 to Nov. 14, May 8 to June 16.

05079000 Red Lake River at Crookston, Minn.

LOCATION.--Lat 47°46'32", long 96°36'33", in SW¼SW¼ sec.30, T.150 N., R.46 W., Polk County, on right bank at downsteam side of highway bridge in Crookston, 0.3 mi (0.5 km) downstream from Interstate Power Co.'s dam, 0.6 mi (1.0 km) downstream from bridge on U.S. Highway 75, and 53 mi (85 km) upstream from mouth.

DRAINAGE AREA.--5,280 mi² (13,680 km²), approximately.

PERIOD OF RECORD.--May 1901 to current year. Monthly discharge only for some periods, published in WSP 1308. Figures of daily discharge for Apr. 3-30, 1904, published in WSP 130, have been found unreliable and should not be used.

GAGE.--Water-stage recorder. Datum of gage is 832.72 ft (253.813 m) above mean sea level, datum of 1929. May 18, 1901, to June 30, 1909, nonrecording gage at bridge 300 ft (91 m) upstream at same datum. July 1, 1909, to Sept. 25, 1911, nonrecording gage, Sept. 26, 1911, to Sept. 30, 1919, water-stage recorder, Oct. 1, 1919, to Sept. 30, 1930, nonrecording gage, at present site and datum.

AVERAGE DISCHARGE.--74 years, 1,116 ft³/s (31.61 m³/s) 808,500 acre-ft/yr (997 hm³/yr).

EXTREMES.--Current year: Maximum discharge, 15,600 ft³/s (442 m³/s) Apr. 18 (gage height, 21.97 ft or 6.696 m); minimum, 479 ft³/s (13.6 m³/s) Nov. 26 (gage height, 3.79 ft or 1.155 m).
Period of record: Maximum discharge, 28,400 ft³/s (804 m³/s) Apr. 12, 1969 (gage height, 27.33 ft or 8.330 m); no flow for part of July 13, 1960 (caused by regulation of powerplant upstream).

REMARKS.--Records good except those for winter periods, which are fair. Diurnal fluctuation prior to 1975 caused by powerplant 1,000 ft (300 m) upstream. Flow partially regulated by outlet dam at Red Lake. Water-quality records for the current year are published in Section 2 of this report.

REVISIONS (WATER YEARS).--WSP 1115: 1906, 1915-16, 1919-20, 1922, 1925, 1927, 1929. WSP 1308: 1916(M), 1919(M), 1928(M), 1930(M). See also PERIOD OF RECORD.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1260	1860	812	1020	960	900	900	10200	2200	4440	2370	965
2	1250	1910	780	1020	950	900	880	9420	2140	5310	2370	1200
3	1270	1910	676	1020	940	900	860	8630	2110	9620	2360	1410
4	1300	1990	725	1020	940	900	840	8120	2080	12400	2270	1440
5	1370	1980	926	1020	930	900	830	8150	2110	13400	2060	1630
6	1390	2000	1000	1020	930	900	800	7850	2140	13200	1990	1810
7	1420	2020	1050	1020	920	900	790	6960	2070	12600	1950	1920
8	1530	2020	900	1020	910	900	800	6220	2010	11800	1900	1860
9	1670	2060	800	1020	910	900	820	5600	2090	11000	1790	1940
10	1690	2020	750	1010	900	900	850	5100	2080	10300	1720	1960
11	1670	1910	800	1010	890	900	900	4710	2060	9680	1760	1940
12	1670	1830	839	1010	890	900	1200	4410	2100	9240	1710	1860
13	1670	1710	850	1000	890	900	2000	4280	2140	8840	1670	1880
14	1670	1580	830	1000	890	900	3000	4120	2180	8430	1590	1880
15	1670	990	850	1000	890	900	4200	3950	2170	7830	1620	1870
16	1670	950	920	1000	890	910	5300	4020	2150	6980	1630	1800
17	1710	1100	900	990	890	920	6700	3890	2060	6150	1650	1670
18	1740	1380	950	990	890	940	13400	3740	2030	5590	1640	1760
19	1720	1670	950	980	890	950	14000	3630	2040	5170	1650	1750
20	1730	1540	1000	980	890	970	13500	3610	2110	4770	1660	1780
21	1700	1170	1000	980	900	990	12600	3110	2260	4380	1700	1770
22	1690	1090	970	980	900	1020	12100	2970	3380	3990	1690	1810
23	1600	1290	990	970	900	1060	10900	2920	4150	3620	1740	1860
24	1620	1160	1000	970	900	1090	11100	2810	4030	3510	1760	1830
25	1600	790	1000	970	900	1070	10800	2740	3650	3460	1710	1810
26	1600	542	1000	970	900	1000	10300	2670	3440	3410	1720	1840
27	1590	632	1020	970	900	840	10000	2510	3200	3210	1690	1800
28	1590	500	1020	970	900	900	9840	2430	3060	2710	1680	1800
29	1600	554	1020	970	---	940	10700	2350	2840	2500	1630	1770
30	1600	712	1020	960	---	980	11000	2290	3190	2450	1490	1780
31	1730	---	1020	960	---	920	---	2200	---	2380	1250	---
TOTAL	48990	42870	28368	30820	25390	28960	181910	145610	75270	212370	55420	52415
MEAN	1580	1429	915	994	907	934	6064	4697	2509	6851	1788	1747
MAX	1740	2060	1050	1020	960	1090	14000	10200	4150	13400	2370	1960
MIN	1250	500	676	960	890	840	790	2200	2010	2380	1250	965
AC-FT	97170	85030	56270	61130	50360	57440	360800	288800	149300	421200	109900	104000

CAL YR 1974 TOTAL 831738 MEAN 2279 MAX 15900 MIN 500 AC-FT 1650000
WTR YR 1975 TOTAL 928393 MEAN 2544 MAX 14000 MIN 500 AC-FT 1841000

05082500 RED RIVER OF THE NORTH AT GRAND FORKS, N. DAK.

LOCATION.--Lat 47°56'34", long 97°03'10", in SW¼NE¼ sec.33, T.152 N., R.50 W., Grand Forks County, on left bank on second floor of old sewage plant in Grand Forks, 2.3 mi (3.7 km) downstream from Red Lake River, and at mile 295.7 (kilometre 475.8).

DRAINAGE AREA.--30,100 mi² (78,000 km²), approximately, includes 3,800 mi² (9,840 km²) in closed basins.

PERIOD OF RECORD.--April 1882 to current year. Monthly discharge only prior to May 1901, published in WSP 1308.

GAGE.--Water-stage recorder. Datum of gage is 778.35 ft (237.241 m) above mean sea level. Nov. 3, 1933, to Apr. 13, 1965, water-stage recorder 0.3 mi (0.5 km) upstream at present datum. See WSP 1728 or 1913 for history of changes prior to Nov. 3, 1933.

AVERAGE DISCHARGE.--93 years, 2,524 ft³/s (71.48 m³/s) 1,829,000 acre-ft/yr (2.26 km³/yr).

EXTREMES.--Current year: Maximum discharge, 42,800 ft³/s (1,210 m³/s) July 14, gage height 43.08 ft (13.131 m); maximum gage height 43.30 ft (13.198 m) Apr. 23; minimum daily discharge, 1,000 ft³/s (28.3 m³/s) Jan. 16; minimum gage height, 6.57 ft (2.003 m).

Period of record: Maximum discharge about 80,000 ft³/s (2,270 m³/s) Apr. 10, 1897, gage height, 50.2 ft (15.30 m), site and datum then in use, from rating curve extended above 54,000 ft³/s (1,530 m³/s) minimum, 2.4 ft³/s (0.068 m³/s) Feb. 3-5, 12, 14, 16-19, 1937, caused by unusual regulation during repair of dam at Grand Forks.

REMARKS.--Records good except those for the winter period, which are fair. Flow regulated by many lakes and reservoirs on tributaries. Records of chemical analysis and water temperatures for the water year 1975 are published in Section 2 of this report.

REVISIONS (WATER YEARS).--WSP 855: 1936(M). WSP 1115: 1942. WSP 1175: 1897(M). WSP 1388: 1904, 1914-15, 1917-19, 1921-22, 1927, 1950. WSP 1728: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1600	2160	1190	1310	1380	1420	2200	38000	4710	14800	4600	2260
2	1600	2330	1180	1310	1390	1410	2200	37200	4550	17200	4300	1950
3	1580	2460	1170	1310	1400	1420	2180	35700	4370	20000	4200	1900
4	1620	2610	1170	1310	1410	1430	2140	35500	4210	24200	4200	2040
5	1720	2720	1170	1300	1420	1430	2090	30300	4130	29100	4100	2060
6	1770	2690	1170	1300	1420	1440	2060	27000	3920	31600	3800	2080
7	1800	2640	1170	1300	1420	1450	2000	24000	3870	33000	3570	2100
8	1780	2640	1170	1320	1420	1450	1950	20700	3780	34600	3370	2150
9	1890	2640	1160	1320	1420	1450	1950	17900	3710	36400	3220	2180
10	1910	2640	1160	1320	1420	1450	2000	15700	3700	38000	3080	2200
11	1930	2600	1160	1310	1420	1450	2200	14500	3700	40800	2920	2220
12	1950	2540	1190	1300	1420	1450	3100	12100	3680	41300	2880	2240
13	1970	2440	1200	1360	1420	1450	5000	11100	3640	41900	2800	2280
14	2000	2330	1200	1290	1420	1450	7700	10600	3610	42400	2730	2300
15	2030	2070	1200	1210	1430	1450	10000	10100	3630	41500	2670	2370
16	2060	1760	1200	1000	1440	1460	12600	9700	3620	40600	2600	2330
17	2080	1610	1210	1150	1440	1470	15600	9100	3550	37400	2560	2480
18	2100	1620	1230	1200	1450	1510	20000	8600	3440	35400	2550	2540
19	2150	1820	1250	1250	1450	1570	28300	8300	3400	32100	2530	2500
20	2150	1860	1270	1260	1450	1620	36800	7800	3500	29000	2520	2450
21	2110	1700	1330	1270	1450	1720	41100	7600	3560	25800	2490	2400
22	2120	1500	1360	1300	1460	1950	42400	7300	4500	20100	2520	2320
23	2110	1400	1390	1350	1460	2200	42200	7200	8100	16100	2560	2280
24	2060	1200	1360	1370	1460	2530	41000	6900	10900	12000	2570	2230
25	2030	1200	1390	1380	1470	2540	40000	6600	12300	9200	2530	2240
26	2020	1200	1330	1380	1470	2400	39500	6400	12700	8200	2570	2220
27	2010	1200	1220	1370	1470	2350	38900	6100	13700	7300	2610	2180
28	2000	1200	1300	1370	1470	2300	38500	5900	14100	6800	2600	2140
29	1990	1200	1320	1370	---	2250	38300	5600	14300	6200	2550	2180
30	1980	1190	1320	1370	---	2240	38300	5400	14400	5500	2500	2030
31	1990	---	1310	1370	---	2220	---	5000	---	5000	2420	---
TOTAL	60110	59170	38450	40330	40150	53930	562270	453900	185180	783500	93120	66850
MEAN	1939	1972	1240	1301	1434	1740	18740	14640	6173	25270	3004	2228
MAX	2150	2720	1390	1380	1470	2540	42400	38000	14400	42400	4600	2540
MIN	1580	1190	1160	1000	1380	1410	1950	5000	3400	5000	2420	1900
AC-FT	119200	117400	76270	79990	79640	107000	1115000	900300	367300	1554000	184700	132600

CAL YR 1974 TOTAL 1632140 MEAN 4472 MAX 34100 MIN 1160 AC-FT 3237000
WTR YR 1975 TOTAL 2436960 MEAN 6677 MAX 42400 MIN 1000 AC-FT 4834000

05087500 Middle River at Argyle, Minn.

LOCATION.--Lat 48°20'27", long 96°49'02", in SE¼SW¼ sec.10, T.156 N., R.48 W., Marshall County, on left bank 20 ft (6.1 m) upstream from bridge on U.S. Highway 75 in Argyle and 14 mi (22 km) upstream from mouth.

DRAINAGE AREA.--265 mi² (686 km²).

PERIOD OF RECORD.--March to September 1945, October 1950 to current year. Monthly discharge only for some periods, published in WSP 1728.

GAGE.--Water-stage recorder. Datum of gage is 828.53 ft (252.54 m) above mean sea level, datum of 1929. Prior to Nov. 8, 1951, nonrecording gages and Nov. 8, 1951, to Sept. 18, 1952, water-stage recorder at present site at datum 1.0 ft (0.30 m) higher.

AVERAGE DISCHARGE.--25 years (1950-75), 44.6 ft³/s (1.263 m³/s), 32,310 acre-ft/yr (39.8 hm³/yr).

EXTREMES.--Current year: Maximum discharge, 4,260 ft³/s (121 m³/s) July 3 (gage height, 16.59 ft or 5.057 m); minimum, 0.10 ft³/s (0.003 m³/s) Sept. 27; minimum gage height, 1.04 ft (0.317 m) Oct. 4.
Period of record: Maximum discharge, 4,260 ft³/s (121 m³/s) July 3, 1975 (gage height, 16.59 ft or 5.057 m); no flow at times in most years.
Flood of April 1950 reached a stage of 15.25 ft (4.648 m) present datum, from floodmarks (discharge, 2,790 ft³/s or 79.0 m³/s).

REMARKS.--Records good except those for winter periods, and those below 2.0 ft³/s (0.057 m³/s), which are poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.58	1.0	.44	.95	.49	.33	1.8	441	27	137	29	4.5
2	.58	1.9	.44	.96	.48	.33	1.8	492	23	294	26	3.6
3	.37	1.5	.45	.96	.47	.33	1.7	421	20	3580	24	3.2
4	.20	1.2	.47	.96	.45	.33	1.7	346	19	3790	22	3.2
5	.70	1.0	.48	.96	.44	.33	1.6	297	17	3060	21	2.7
6	.64	.80	.51	.96	.43	.33	1.6	250	15	2310	18	2.9
7	.42	.70	.52	.96	.42	.33	1.6	226	14	1770	17	2.8
8	.31	.62	.53	.96	.41	.33	1.6	186	13	1410	15	2.6
9	.28	.57	.54	.96	.40	.33	1.7	148	12	1100	14	2.2
10	.23	.53	.56	.96	.39	.33	1.7	120	12	826	13	2.0
11	.20	.50	.57	.94	.37	.33	1.9	100	14	589	12	1.8
12	.19	.48	.58	.92	.37	.33	3.7	83	14	439	11	1.5
13	.18	.46	.58	.91	.37	.33	13	73	14	344	9.7	1.4
14	.20	.45	.60	.89	.36	.34	38	63	14	273	9.4	1.1
15	.60	.44	.62	.86	.36	.35	95	57	16	220	9.0	1.0
16	.65	.43	.63	.84	.35	.36	226	54	16	176	8.2	.93
17	.60	.42	.65	.82	.35	.50	330	52	17	143	7.6	.79
18	.50	.41	.66	.79	.35	.83	439	51	16	120	7.0	1.6
19	.45	.41	.68	.76	.35	1.4	552	48	15	102	6.6	1.1
20	.40	.41	.70	.73	.34	3.5	775	44	15	87	6.3	1.1
21	.35	.40	.72	.71	.34	3.5	733	41	16	77	6.1	1.0
22	.32	.40	.74	.68	.34	3.1	565	37	17	66	5.9	.83
23	.29	.40	.76	.66	.34	2.8	480	36	29	61	5.7	.61
24	.26	.40	.78	.64	.34	2.6	424	34	79	55	5.4	.44
25	.23	.40	.80	.62	.34	2.5	419	31	137	51	5.0	.43
26	.21	.40	.83	.60	.33	2.3	397	29	141	48	4.7	.20
27	.19	.41	.84	.58	.33	2.2	344	28	140	44	4.3	.12
28	.18	.41	.86	.56	.33	2.1	289	28	208	41	4.4	.22
29	.17	.42	.88	.54	---	2.0	274	28	162	39	3.9	.19
30	.17	.43	.90	.52	---	1.9	320	24	129	35	3.8	.29
31	.17	---	.93	.50	---	1.8	---	23	---	32	4.6	---
TOTAL	10.82	18.30	20.25	24.66	10.64	38.37	6735.4	3899	1381	21319	339.6	46.35
MEAN	.35	.61	.65	.80	.38	1.24	225	126	46.0	688	11.0	1.55
MAX	.70	1.9	.93	.96	.49	3.5	775	492	208	3790	29	4.5
MIN	.17	.40	.44	.50	.33	.33	1.6	23	12	32	3.8	.12
AC-FT	21	36	40	49	21	76	13360	7730	2740	42290	674	92

CAL YR 1974 TOTAL 20254.94 MEAN 55.5 MAX 1840 MIN 0 AC-FT 40180
WTR YR 1975 TOTAL 33843.39 MEAN 92.7 MAX 3790 MIN .12 AC-FT 67130

05092000 RED RIVER OF THE NORTH AT DRAYTON, N. DAK.

LOCATION.--Lat 48°34'20", long 97°08'50", in SE¼SE¼SE¼ sec.24, T.159 N., R.51 W., Pembina County, on downstream end of east pier of interstate highway bridge, 1.5 mi (2.4 km) northeast of Drayton and at mile 206.7 (kilometre 332.6).

DRAINAGE AREA.--34,800 mi² (90,130 km²), approximately, includes 3,800 mi² (9,840 km²) in closed basins.

PERIOD OF RECORD.--April 1936 to June 1937, April 1941 to current year (fragmentary prior to April 1949).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 755.00 ft (230.124 m) above mean sea level (Minnesota highway benchmark). Prior to Nov. 30, 1954, nonrecording gage at site 1.5 mi (2.4 km) upstream at datum 1.59 ft (0.485 m) higher.

AVERAGE DISCHARGE.--26 years (1949-75) 3,898 ft³/s (110.4 m³/s) 2,824,000 acre-ft/yr (3.48 km³/yr); median of yearly mean discharges, 2,650 ft³/s (75.0 m³/s) 1,920,000 acre-ft/yr (2.4 km³/yr).

EXTREMES.--Current year: Maximum discharge, 44,000 ft³/s (1,250 m³/s) May 4; gage height, 39.80 ft (12.131 m) minimum daily discharge, 1,010 ft³/s (28.6 m³/s) Jan. 19, gage height, 10.05 ft (3.063 m).

Period of record: Maximum discharge, 86,500 ft³/s (2,450 m³/s) May 12, 1950, gage height, 41.58 ft (12.674 m), former site and datum; minimum observed, 7.7 ft³/s (0.22 m³/s) Oct. 16, 1936, gage height, 1.75 ft (0.533 m), former site and datum.

Maximum discharge known since 1860, that of May 12, 1950. Flood of April 1897 reached a stage of about 41 ft (12.5 m), at site and datum in use prior to Nov. 30, 1954.

REMARKS.--Records good. Some regulation by reservoirs on tributaries. Records of chemical analyses and water temperatures for the water year 1975 are published in Section 2 of this report.

REVISIONS (WATER YEARS).--WSP 1388: 1949-50. WSP 1728: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1700	2050	1200	1400	1400	1450	2290	43000	5400	14600	12300	2590
2	1690	2060	1200	1400	1400	1450	2280	43600	5300	16900	10300	2520
3	1660	2060	1200	1400	1400	1600	2260	43700	5100	18700	8700	2470
4	1650	2100	1200	1400	1400	1600	2240	44000	5000	20500	7100	2230
5	1670	2300	1200	1390	1420	1600	2210	42200	4900	22700	5920	2210
6	1690	2500	1200	1390	1420	1400	2180	40700	4800	24600	5340	2310
7	1700	2830	1200	1400	1420	1400	2100	39100	4700	26100	4700	2420
8	1750	2820	1200	1390	1420	1400	2040	37100	4600	27100	4090	2540
9	1790	2820	1200	1380	1420	1400	2030	35000	4520	29600	3790	2650
10	1830	2800	1200	1400	1420	1400	2040	34200	4430	30800	3560	2720
11	1870	2800	1220	1400	1420	1450	2160	31100	4320	31400	3380	2760
12	1990	2770	1240	1350	1430	1450	2770	28400	4280	31900	3200	2780
13	2000	2710	1250	1340	1450	1500	4270	25300	4200	32200	3090	2780
14	2000	2620	1230	1350	1450	1500	7000	23200	4130	32500	2980	2760
15	2000	2500	1250	1320	1450	1500	9560	21500	4110	33300	2920	2700
16	2000	2410	1300	1290	1450	1500	12200	19900	4190	33900	2860	2680
17	2020	2140	1300	1190	1450	1500	15900	18400	4090	34800	2770	2640
18	2040	1840	1300	1080	1450	1500	18300	17100	4150	35500	2740	2600
19	2090	1730	1300	1010	1450	1500	22200	15700	3930	36600	2700	2460
20	2160	1830	1310	1060	1450	1500	24100	14300	3890	37000	2660	2420
21	2160	1970	1340	1150	1450	1600	26700	12900	3870	37300	2620	2380
22	2160	2000	1370	1200	1450	1700	29100	11800	4070	36800	2600	2350
23	2160	1950	1390	1300	1450	1850	30700	10500	5800	35000	2620	2350
24	2140	1600	1390	1400	1450	1950	31800	9500	6970	33000	2620	2350
25	2130	1230	1390	1400	1450	2100	34000	8400	8770	30500	2620	2320
26	2100	1120	1390	1400	1450	2400	36100	7600	10100	28300	2640	2300
27	2090	1170	1390	1400	1450	2400	37000	7000	11100	26000	2650	2280
28	2070	1230	1350	1400	1450	2350	39800	6600	12100	23600	2660	2280
29	2060	1210	1360	1400	---	2320	41000	6200	12800	20800	2680	2270
30	2060	1200	1350	1400	---	2300	42100	5900	13800	18000	2650	2240
31	2040	---	1390	1400	---	2300	---	5800	---	15600	2620	---
TOTAL	60470	62370	39790	41190	40170	52270	488430	709700	179120	875400	124080	74360
MEAN	1951	2079	1284	1329	1435	1686	16280	22890	5971	28240	4003	2479
MAX	2160	2830	1390	1400	1450	2400	42100	44000	13800	37300	12300	2780
MIN	1650	1120	1200	1010	1400	1400	2030	5800	3870	14600	2600	2210
AC-FT	119900	123700	78920	81700	79680	103700	968800	1408000	355300	1736000	246100	147500

CAL YR 1974 TOTAL 1950900 MEAN 5345 MAX 43500 MIN 1120 AC-FT 3870000
WTR YR 1975 TOTAL 2747350 MEAN 7527 MAX 44000 MIN 1010 AC-FT 5449000

05094000 South Branch Two Rivers at Lake Bronson, Minn.

LOCATION.--Lat 48°43'50", long 96°39'50", in SW¼SW¼ sec.30, T.161 N., R.46 W., Kittson County, on left bank 70 ft (21 m) upstream from culvert on U.S. Highway 59 at town of Lake Bronson and 2 mi (3 km) downstream from dam at outlet of Bronson Lake.

DRAINAGE AREA.--444 mi² (1,150 km²).

PERIOD OF RECORD.--September 1928 to November 1936, April to September 1937, April 1941 to October 1943, April to December 1944, April 1945 to September 1947, October 1953 to current year. Monthly discharge only for some periods, published in WSP 1308. Published as South Fork Two Rivers at Bronson prior to 1941.

GAGE.--Water-stage recorder. Datum of gage is 928.53 ft (283.02 m) above mean sea level, datum of 1929 (Minnesota Highway Department bench mark). Prior to Nov. 23, 1953, nonrecording gage at bridge 100 ft (30 m) downstream at datum 2.00 ft (0.61 m) higher. Nov. 23, 1953, to Oct. 5, 1963, water-stage recorder at same site at datum 2.00 ft (0.61 m) higher.

AVERAGE DISCHARGE.--34 years (1928-36, 1941-43, 1945-47, 1953-75), 94.0 ft³/s (2.662 m³/s), 68,100 acre-ft/yr (84.0 hm³/yr).

EXTREMES.--Current year: Maximum discharge, 1,960 ft³/s (55.5 m³/s) July 6 (gage height, 10.37 ft or 3.161 m); minimum daily, 1.2 ft³/s (0.034 m³/s) Mar. 14 to Apr. 2.
Period of record: Maximum discharge, 5,410 ft³/s (153 m³/s) Apr. 5, 1966 (gage height, 18.23 ft or 5.557 m); no flow at times in 1937, 1941, 1960, 1973.

REMARKS.--Records good except those for winter period, which are fair. Flow partly regulated since 1937 by Bronson Lake (usable capacity, 3,700 acre-ft or 4.56 hm³).

REVISIONS (WATER YEARS).--WSP 1308: 1929(M), 1931(M), 1936(M), 1944(M), 1947(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.4	3.7	3.2	2.6	1.8	1.4	1.2	1740	151	455	8.5	6.5
2	2.4	3.7	3.2	2.6	1.8	1.4	1.2	1810	68	1230	7.2	5.5
3	2.6	3.9	3.2	2.6	1.8	1.4	1.3	1670	184	1590	6.5	5.5
4	2.4	3.9	3.2	2.6	1.8	1.4	1.3	1460	206	1600	5.9	5.8
5	3.8	3.7	3.1	2.5	1.8	1.4	1.3	1320	125	1760	5.9	6.0
6	4.3	3.9	3.1	2.5	1.8	1.4	1.4	1130	46	1810	5.3	7.0
7	4.7	3.9	3.1	2.5	1.8	1.4	1.8	897	184	1550	4.7	7.0
8	5.0	3.9	3.1	2.4	1.8	1.3	2.5	597	162	1020	5.3	6.2
9	4.9	3.9	3.0	2.4	1.8	1.3	3.5	438	12	942	4.6	6.2
10	5.0	3.8	3.0	2.4	1.8	1.3	7.0	321	59	618	4.2	5.2
11	5.2	4.0	3.0	2.4	1.8	1.3	20	253	117	314	4.5	5.2
12	6.0	4.3	3.0	2.3	1.7	1.3	50	246	167	333	3.9	4.8
13	6.6	4.3	2.9	2.3	1.7	1.3	150	246	117	284	3.7	4.6
14	6.5	4.0	2.9	2.3	1.7	1.2	358	243	14	93	3.9	4.2
15	6.5	3.9	2.9	2.3	1.7	1.2	697	249	43	193	3.9	3.6
16	7.0	4.0	2.9	2.2	1.7	1.2	824	253	55	169	4.0	3.4
17	6.4	3.9	2.8	2.2	1.7	1.2	1030	252	57	146	4.2	4.0
18	6.1	3.8	2.8	2.2	1.6	1.2	1110	280	50	87	4.5	4.6
19	6.2	4.0	2.8	2.1	1.6	1.2	1030	292	44	92	4.8	4.0
20	6.7	4.1	2.8	2.1	1.6	1.2	1070	281	67	92	5.0	4.0
21	7.9	3.9	2.8	2.0	1.6	1.2	1100	215	71	85	5.2	4.0
22	2.5	3.7	2.8	2.0	1.6	1.2	1120	222	5.6	22	5.2	3.6
23	1.9	3.6	2.8	2.0	1.5	1.2	1160	229	50	47	6.0	3.6
24	2.6	3.4	2.7	2.0	1.5	1.2	1200	230	245	55	5.0	3.6
25	2.9	3.4	2.7	2.0	1.5	1.2	1220	231	231	50	4.9	4.6
26	2.5	3.4	2.7	2.0	1.5	1.2	1190	230	218	36	5.1	5.8
27	2.9	3.4	2.7	1.9	1.4	1.2	1080	226	269	26	5.1	6.2
28	2.9	3.4	2.7	1.9	1.4	1.2	1020	218	328	20	4.8	5.5
29	3.1	3.3	2.6	1.9	---	1.2	1330	209	291	15	4.8	5.2
30	3.3	3.3	2.6	1.9	---	1.2	1450	200	262	12	4.7	4.8
31	3.3	---	2.6	1.9	---	1.2	---	191	---	9.5	9.2	---
TOTAL	136.1	113.4	89.7	69.0	46.8	39.2	18231.5	16315	3902.6	14715.5	160.5	150.8
MEAN	4.39	3.78	2.89	2.23	1.67	1.26	608	526	130	475	5.18	5.03
MAX	7.9	4.3	3.2	2.6	1.8	1.4	1450	1810	328	1810	9.2	7.0
MIN	1.9	3.3	2.6	1.9	1.4	1.2	1.2	191	5.6	9.5	3.7	3.4
AC-FT	270	225	178	137	93	78	36160	32360	7740	29190	318	299

CAL YR 1974 TOTAL 55802.7 MEAN 153 MAX 2680 MIN 1.6 AC-FT 110700
WTR YR 1975 TOTAL 53970.1 MEAN 148 MAX 1810 MIN 1.2 AC-FT 107000

05102500 RED RIVER OF THE NORTH AT EMERSON, MANITOBA
(International gaging station)

LOCATION.--Lat 49°00'30", long 97°12'40", in sec.2, T.1, R.2 E., on right bank 1,500 ft (460 m) downstream from Canadian National Railway bridge in Emerson, 0.8 mi (1.3 km) downstream from international boundary, 3.6 mi (5.8 km) downstream from Pembina River, and at mile 154.3 (kilometre 248.3).

DRAINAGE AREA.--40,200 mi² (104,100 km²), approximately, includes 3,800 mi² (9,840 km²) in closed basins.

PERIOD OF RECORD.--March to November 1902 (gage heights only), May 1912 to September 1929 (monthly discharge only, published in WSP 1308). October 1929 to current year.

GAGE.--Water-stage recorder. Datum of gage is 700.00 ft (213.360 m) above mean sea level, datum of 1929, by Geodetic Survey of Canada. See WSP 1728 or 1913 for history of changes prior to Apr. 10, 1953.

AVERAGE DISCHARGE.--63 years (1912-75) 3,259 ft³/s (92.29 m³/s), 2,361,000 acre-ft/yr (2.91 km³/yr); median of yearly mean discharges, 2,630 ft³/s (74 m³/s), 1,910,000 acre-ft/yr (2.4 km³/yr).

EXTREMES.--Current year: Maximum discharge, 42,800 ft³/s (1,210 m³/s) May 8; gage height, 84.32 ft (25.701 m); minimum daily discharge, 981 ft³/s (27.8 m³/s) Jan. 21.

Period of record: Maximum discharge, 95,500 ft³/s (2,700 m³/s) May 13, 1950, gage height, 90.89 ft (27.703 m); minimum observed, 0.9 ft³/s (0.025 m³/s) Feb. 6-8, 1937, gage height, 44.00 ft (13.411 m).

REMARKS.--Records good. Discharge partially regulated by reservoirs on tributaries.

COOPERATION.--This station is one of the international gaging stations maintained by Canada under agreement with the United States.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1570	2050	1410	1360	1330	1470	2100	37300	7770	15600	17700	2990
2	1580	2070	1410	1380	1320	1480	2070	38600	7460	17400	14100	2860
3	1570	2140	1400	1390	1310	1480	2050	39800	7180	19000	11300	2720
4	1540	2280	1400	1400	1320	1470	2040	40900	6820	20300	8700	2510
5	1540	2450	1400	1410	1340	1450	2040	41800	6600	22000	7000	2330
6	1570	2610	1410	1420	1360	1440	2020	42400	6390	23600	5250	2310
7	1620	2750	1420	1420	1370	1460	1990	42700	6150	24700	4810	2370
8	1690	2840	1450	1440	1380	1470	1960	42700	5890	25600	4490	2400
9	1760	2820	1520	1440	1390	1460	1930	42400	5790	26600	4190	2550
10	1800	2820	1540	1440	1390	1460	1920	41400	5760	27200	3950	2640
11	1830	2820	1540	1460	1400	1460	1910	40100	5530	27700	3760	2700
12	1900	2810	1510	1470	1400	1460	2010	38900	5420	28100	3600	2730
13	1990	2810	1410	1470	1410	1470	2320	37000	5360	28800	3460	2750
14	2020	2730	1290	1460	1410	1480	3060	34500	5320	29400	3340	2750
15	2050	2700	1200	1460	1410	1480	4540	32300	5200	30200	3240	2730
16	2060	2580	1190	1420	1430	1490	6800	30100	5050	31100	3160	2690
17	2060	2450	1210	1350	1440	1500	9480	27900	4930	32000	3080	2660
18	2080	2230	1220	1250	1440	1520	12000	25300	4840	33000	3030	2660
19	2100	1850	1220	1110	1460	1550	14200	22500	4740	33800	2990	2600
20	2130	1700	1220	1000	1460	1580	16500	20300	4640	34500	2950	2530
21	2160	1610	1230	981	1460	1590	19100	18000	4610	35000	2920	2490
22	2180	1540	1250	1030	1460	1610	24200	16000	4730	35500	2910	2470
23	2200	1500	1330	1090	1470	1650	28700	14100	5350	35700	2890	2450
24	2200	1470	1370	1120	1470	1720	29000	12800	6120	35500	2900	2460
25	2190	1460	1380	1170	1470	1850	29300	11600	8070	34700	2890	2440
26	2170	1450	1390	1220	1470	2000	29900	10600	10100	33500	2900	2410
27	2140	1440	1380	1270	1480	2160	31100	9850	11400	31400	2910	2400
28	2110	1420	1380	1300	1480	2260	32900	9320	12400	28900	2910	2390
29	2090	1420	1370	1320	---	2280	35200	8870	13400	26000	2930	2380
30	2080	1420	1330	1340	---	2250	36200	8480	14700	22600	2930	2360
31	2070	---	1330	1330	---	2170	---	8110	---	19400	2920	---
TOTAL	60050	64240	42110	40721	39530	51170	388540	846630	207690	868700	146110	76790
MEAN	1937	2141	1358	1314	1412	1651	12950	27310	6923	28020	4713	2560
MAX	2200	2840	1540	1470	1480	2280	36200	42700	14700	35700	17700	2990
MIN	1540	1420	1190	981	1310	1440	1910	8110	4610	15600	2890	2310
AC-FT	119100	127400	83530	80770	78410	101500	770700	1679000	412000	1723000	289800	152300

CAL YR 1974 TOTAL 2430710 MEAN 6659 MAX 63400 MIN 1190 AC-FT 4821000
WTR YR 1975 TOTAL 2832201 MEAN 7760 MAX 42700 MIN 981 AC-FT 5618000

NOTE.--Differences between figures published herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

05104500 Roseau River below South Fork near Malung, Minn.

LOCATION.--Lat 48°47'30", long 95°44'40", in SW¼ sec.6, T.161 N., R.39 W., Roseau County, on left bank 0.3 mi (0.5 km) downstream from South Fork and 1.5 mi (2.4 km) northwest of Malung.

DRAINAGE AREA.--573 mi² (1,484 km²).

PERIOD OF RECORD.--October 1946 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,029.67 ft (313.84 m) above mean sea level, adjustment of 1912.

AVERAGE DISCHARGE.--29 years, 156 ft³/s (4.42 m³/s), 113,000 acre-ft/yr (139 hm³/yr).

EXTREMES.--Current year: Maximum discharge, 4,180 ft³/s (118 m³/s) July 3 (gage height, 18.93 ft or 5.770 m); minimum, 1.8 ft³/s (0.051 m³/s) Sept. 27 (gage height, 4.45 ft or 1.356 m).
Period of record: Maximum discharge, 5,750 ft³/s (163 m³/s) July 18, 1968 (gage height, 22.32 ft or 6.803 m); maximum gage height, 23.37 ft (7.123 m) Apr. 3, 1966 (backwater from ice); no flow for part of Jan. 15, 1952 (caused by construction of concrete control) and July 23 to Sept. 8, 1961.

REMARKS.--Records good. Some flow bypasses the gaging station through a natural overflow channel 0.8 mi (1.3 km) upstream and returns to river 0.5 mi (0.8 km) downstream. Overflow begins at stage of about 13.0 ft (4.0 m), discharge, 1,800 ft³/s (51.0 m³/s). These records include any flow in the overflow channel.

REVISIONS (WATER YEARS).--WRD MINN 1970: 1948, 1950, 1951, 1956(M), 1957(M), 1962(M), 1966(M), 1967(M), 1968.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31	43	24	12	11	9.0	9.7	2430	78	1420	27	9.1
2	27	35	24	12	11	8.5	9.7	2130	70	2740	27	9.6
3	26	46	23	12	11	8.7	9.7	1880	62	3820	27	7.4
4	24	46	22	12	11	8.5	9.7	1640	82	3940	27	6.8
5	23	50	21	12	11	8.5	9.9	1440	70	3220	25	7.6
6	30	52	20	12	11	8.3	9.9	1240	98	2480	24	6.6
7	57	51	19	12	11	8.2	10	1180	128	1820	22	6.2
8	65	55	18	11	11	7.8	10	1010	135	1330	21	6.1
9	67	62	17	11	11	7.8	10	876	124	1020	18	5.3
10	78	65	16	11	11	7.5	11	758	113	770	16	5.5
11	81	64	16	11	11	7.1	11	652	113	575	14	5.1
12	85	64	15	10	11	7.2	12	584	122	449	14	4.7
13	78	61	15	10	9.9	7.2	15	490	128	342	13	3.7
14	74	46	15	10	9.5	7.3	100	428	128	271	11	3.5
15	72	50	15	10	9.0	7.3	500	394	133	221	9.9	3.2
16	73	80	15	9.9	9.4	7.3	1000	352	131	187	9.3	3.1
17	72	72	15	9.9	9.4	7.5	1900	324	118	180	9.0	2.8
18	71	56	15	9.9	9.1	7.6	2250	290	101	159	7.8	2.8
19	73	57	15	10	9.5	7.9	2580	263	85	122	6.7	2.7
20	66	55	15	10	9.4	8.1	2780	234	78	109	6.1	2.6
21	64	50	15	10	9.3	8.4	2810	212	111	96	5.4	3.1
22	61	53	14	10	9.2	8.4	2580	195	241	81	5.4	3.2
23	57	53	14	10	9.1	8.3	2740	178	530	70	5.1	3.0
24	54	41	14	10	9.2	8.5	3520	151	584	81	4.8	2.6
25	51	44	13	10	9.2	8.8	3580	147	550	55	4.2	2.4
26	49	42	13	11	9.3	9.0	3130	147	504	50	4.4	2.2
27	47	40	13	11	9.3	9.3	2520	131	425	45	4.0	1.8
28	53	28	13	11	9.2	9.5	2960	124	384	40	4.8	2.2
29	52	27	12	11	---	9.6	3270	124	418	30	4.3	3.8
30	48	26	12	11	---	9.8	2830	105	708	32	3.9	3.1
31	44	---	12	11	---	9.6	---	90	---	28	3.9	---
TOTAL	1752	1516	500	333.7	281.7	255.7	41187.6	20168	6499	25719	387.0	134.5
MEAN	56.5	50.5	16.1	10.8	10.1	8.25	1373	651	217	830	12.5	4.48
MAX	85	80	24	12	11	9.8	3580	2430	708	3940	27	9.6
MIN	23	26	12	9.9	9.1	7.1	9.7	90	62	28	3.9	1.8
AC-FT	3480	3010	992	662	559	507	81700	40000	12890	51010	768	267

CAL YR 1974 TOTAL 76503.8 MEAN 210 MAX 5000 MIN 1.4 AC-FT 151700
WTR YR 1975 TOTAL 98734.2 MEAN 271 MAX 3940 MIN 1.8 AC-FT 195800

05106000 Sprague Creek near Sprague, Manitoba

(International gaging station)

LOCATION.--Lat 48°59'33", long 95°39'43", in NE¼ sec.34, T.164 N., R.39 W., Roseau County, on left bank 0.5 mi (0.8 km) south of international boundary, 3.5 mi (5.6 km) south of Sprague, Manitoba, 8 mi (13 km) upstream from mouth, and 10.5 mi (16.9 km) northeast of Roseau, Minn.

DRAINAGE AREA.--169 mi² (438 km²). Prior to October 1958, 151 mi² (391 km²); change due to construction of drainage ditch within basin.

PERIOD OF RECORD.--September 1928 to current year (winter records incomplete prior to 1941). Prior to September 1951, published as Mud Creek near Sprague.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,038.4 ft (316.504 m) above mean sea level, datum of 1929. Prior to Mar. 15, 1929, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--36 years (1928-29, 1940-75), 61.9 ft³/s (1.753 m³/s), 44,850 acre-ft/yr (55.3 hm³/yr).

EXTREMES.--Current year: Maximum discharge, 492 ft³/s (13.9 m³/s) Apr. 29 (gage height, 9.18 ft or 2.798 m); minimum daily, 1.7 ft³/s (0.048 m³/s) Mar. 11-18; minimum gage height, 1.78 ft (0.542 m) Dec. 14, caused by siphon action.

Period of record: Maximum discharge, 2,560 ft³/s (72.5 m³/s) Apr. 22, 1974 (gage height, 15.00 ft or 4.572 m); maximum gage height, 15.31 ft (4.666 m) Sept. 1, 1942; no flow at times in some years.

REMARKS.--Records good except those for winter periods and those for period of no gage-height record, which are fair.

COOPERATION.--This station is maintained by the United States under agreement with Canada.

REVISIONS (WATER YEARS).--WSP 1055: 1944. WSP 1308: 1931(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	24	6.6	2.6	2.4	2.1	2.3	460	56	193	8.4	15
2	21	24	6.3	2.6	2.4	2.1	2.3	471	53	249	7.8	9.1
3	20	24	6.0	2.6	2.4	2.0	2.4	450	51	208	7.4	9.1
4	20	24	5.7	2.6	2.4	2.0	2.4	418	50	157	6.8	7.4
5	25	24	5.4	2.6	2.4	1.9	2.4	383	87	117	6.2	6.1
6	39	23	5.2	2.5	2.4	1.9	2.4	344	108	89	6.0	5.8
7	42	24	5.1	2.5	2.4	1.9	2.5	314	146	70	5.3	5.9
8	42	25	4.9	2.5	2.4	1.8	2.5	287	158	56	6.6	6.9
9	41	26	4.7	2.4	2.4	1.8	2.6	262	160	45	4.2	6.5
10	40	26	4.5	2.4	2.4	1.8	2.6	238	150	34	4.0	6.9
11	39	24	4.3	2.4	2.4	1.7	2.7	227	150	31	3.7	5.8
12	36	22	4.0	2.4	2.3	1.7	2.8	213	140	26	3.8	5.1
13	34	22	3.6	2.4	2.3	1.7	3.5	203	120	21	5.6	4.5
14	35	20	3.3	2.3	2.3	1.7	16	190	98	19	4.8	4.1
15	37	19	3.1	2.3	2.3	1.7	58	180	87	16	4.0	3.7
16	46	19	2.8	2.3	2.3	1.7	203	170	75	16	3.7	3.9
17	36	18	2.7	2.3	2.3	1.7	255	157	67	14	4.1	3.8
18	31	17	2.7	2.3	2.3	1.7	285	156	59	12	3.9	3.9
19	32	17	2.7	2.3	2.3	1.8	311	143	53	10	3.0	4.7
20	31	17	2.7	2.3	2.3	1.9	335	139	62	9.3	4.0	5.4
21	30	16	2.7	2.3	2.3	1.9	354	131	111	8.1	4.9	5.8
22	30	16	2.7	2.3	2.3	1.9	347	122	146	5.8	4.6	5.2
23	30	15	2.7	2.3	2.3	2.0	414	111	213	8.4	5.0	5.0
24	29	14	2.7	2.3	2.3	2.0	468	101	201	8.8	4.5	6.2
25	28	11	2.7	2.3	2.3	2.0	428	93	162	7.4	3.9	4.6
26	26	9.7	2.7	2.3	2.3	2.1	388	87	141	9.0	4.2	3.7
27	26	9.3	2.7	2.3	2.2	2.1	388	81	129	8.1	4.4	3.5
28	25	8.1	2.6	2.3	2.2	2.2	438	76	114	5.8	6.1	3.8
29	25	7.5	2.6	2.3	---	2.2	484	71	135	5.1	4.0	2.9
30	25	6.8	2.6	2.3	---	2.3	471	66	168	4.4	3.2	3.0
31	25	---	2.6	2.4	---	2.3	---	61	---	3.5	4.1	---
TOTAL	967	552.4	115.6	74.0	65.3	59.6	5676.4	6405	3450	1471.0	152.2	167.3
MEAN	31.2	18.4	3.73	2.39	2.33	1.92	189	207	115	47.5	4.91	5.58
MAX	46	26	6.6	2.6	2.4	2.3	484	471	213	249	8.4	15
MIN	20	6.8	2.6	2.3	2.2	1.7	2.3	61	50	3.5	3.0	2.9
AC-FT	1920	1100	229	147	130	118	11260	12700	6840	2920	302	332

CAL YR 1974 TOTAL 40468.91 MEAN 111 MAX 2480 MIN .55 AC-FT 80270
WTR YR 1975 TOTAL 19166.40 MEAN 52.5 MAX 484 MIN 1.7 AC-FT 38020

NOTE.--No gage-height record May 11 to June 10.

05106500 Roseau River at Roseau Lake, Minn.

LOCATION.--Lat 48°54'22", long 95°49'55", in SW¼SW¼ sec.28, T.163 N., R.40 W., Roseau County, on left bank at downstream side of bridge at Roseau Lake, 3.5 mi (5.6 km) upstream from Pine Creek, 3.8 mi (6.1 km) downstream from Sprague Creek, and 7 mi (11 km) northwest of Roseau.

PERIOD OF RECORD.--November 1939 to current year (incomplete).

GAGE.--Water-stage recorder. Datum of gage is 1,018.59 ft (310.466 m) above mean sea level, adjustment of 1928 by Geodetic Survey of Canada. Prior to Aug. 26, 1970, nonrecording gage at same site and datum. Gage readings have been reduced to elevations above mean sea level.

EXTREMES.--Current year: Maximum elevation recorded, 1,035.14 ft (315.511 m) May 4; minimum recorded, 1,021.09 ft (311.228 m) Aug. 13.
Period of record: Maximum elevation observed, 1,036.86 ft (316.035 m) May 13, 1950; minimum observed, 1,019.75 ft (310.820 m) Aug. 16, 1941.
Flood of July 1919 reached an elevation of about 1,034 ft (315.2 m).

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21.79	21.94					---	35.03	28.90	28.96	22.43	23.37
2	21.76	21.90					---	35.09	28.50	30.48	22.46	23.61
3	21.74	21.93					---	35.12	28.04	31.09	22.30	22.67
4	21.70	21.96					---	35.11	27.62	31.57	22.11	21.64
5	21.73	21.95					---	35.07	27.48	31.87	21.83	21.63
6	21.80	22.02					---	34.98	27.23	32.07	21.58	21.58
7	22.13	22.03					---	34.88	26.94	32.14	21.40	21.58
8	22.39	22.04					---	34.73	26.58	32.09	21.30	21.54
9	22.49	22.07					---	34.59	26.14	31.96	21.26	21.52
10	22.53	22.13					---	34.44	26.00	31.82	21.25	21.51
11	22.61	22.17					---	34.26	26.17	31.60	21.19	21.50
12	22.66	22.19					---	34.08	26.10	31.34	21.12	21.49
13	22.62	22.13					---	33.88	25.92	31.05	21.09	21.47
14	22.55	22.09					---	33.73	25.71	30.74	21.12	21.45
15	22.52	22.10					29.14	33.51	25.47	30.40	21.14	21.41
16	22.48	22.12					30.48	33.30	25.20	30.05	21.20	21.36
17	22.58	22.17					31.33	33.10	24.92	29.68	21.25	21.33
18	22.49	22.23					31.86	32.90	24.61	29.31	21.29	21.34
19	22.41	22.17					32.38	32.69	24.25	28.90	21.34	21.36
20	22.41	---					32.95	32.45	24.09	28.44	21.37	21.42
21	22.34	---					33.12	32.20	24.59	27.90	21.38	21.44
22	22.27	---					33.34	31.90	26.04	27.27	21.42	21.49
23	22.22	---					33.61	31.63	27.80	26.54	21.44	21.52
24	22.16	---					33.83	31.39	28.14	---	21.40	21.55
25	22.11	---					34.08	31.10	28.03	---	21.32	21.63
26	22.07	---					34.28	30.78	27.84	---	21.23	21.70
27	22.02	---					34.45	30.47	27.69	---	21.18	21.76
28	21.99	---					34.63	30.20	27.57	---	21.18	21.82
29	21.97	---					34.80	29.90	27.67	22.96	21.23	21.86
30	22.04	---					34.90	29.59	28.08	22.69	21.21	21.91
31	22.01	---					---	29.25	---	22.48	21.20	---
MEAN	22.22							32.95	26.64		21.43	21.72
MAX	22.66							35.12	28.90		22.46	23.61
MIN	21.70							29.25	24.09		21.09	21.33

NOTE.--Add 1,000 ft to obtain elevations above mean sea level.

05107500 Roseau River at Ross, Minn.

LOCATION.--Lat 48°54'37", long 95°55'18", in SE¼ sec.27, T.163 N., R.41 W., Roseau County, on left bank 300 ft (91 m) downstream from highway bridge, 0.2 mi (0.3 km) north of Ross, and 2.3 mi (3.7 km) downstream from Pine Creek.

DRAINAGE AREA.--1,220 mi² (3,160 km²), approximately.

PERIOD OF RECORD.--July 1928 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,018.44 ft (310.42 m) above mean sea level, adjustment of 1928 by Geodetic Survey of Canada. Prior to Mar. 13, 1929, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--47 years, 274 ft³/s (7.760 m³/s), 198,500 acre-ft/yr (245 hm³/yr).

EXTREMES.--Current year: Maximum discharge, 3,280 ft³/s (92.9 m³/s) Apr. 28 (gage height, 15.91 ft or 4.849 m); maximum gage height, 16.06 ft (4.895 m) May 5; minimum discharge, 3.5 ft³/s (0.099 m³/s) Aug. 28 (gage height, 1.23 ft or 0.375 m).

Period of record: Maximum discharge, 6,560 ft³/s (186 m³/s) May 12, 1950 (gage height, 18.25 ft or 5.563 m); no flow Aug. 29, 30, 1961.

Maximum stage known, about 19 ft (5.8 m) in 1896. Other outstanding floods reached the following stages (from information by local residents): flood of July 1919, 17.5 ft (5.3 m); flood of 1927, about 16 ft (4.9 m).

REMARKS.--Records good except those for winter period, which are fair. High flow affected by natural storage in Roseau Lake.

REVISIONS (WATER YEARS).--WSP 1055: 1945. WSP 1175: Drainage area. WSP 1308: 1936(M). WSP 1508: 1948-49(P).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	70	76	40	23	21	17	18	3070	1030	943	91	8.5
2	69	78	38	23	21	17	18	3150	952	1140	93	19
3	69	80	36	22	21	17	18	3190	868	1250	85	24
4	68	80	35	22	21	17	18	3210	788	1400	74	23
5	70	81	33	22	21	16	18	3200	754	1520	58	22
6	79	85	32	22	21	16	18	3180	720	1620	45	20
7	94	86	30	22	21	16	18	3070	679	1680	35	19
8	110	88	29	22	21	16	19	2950	621	1710	29	18
9	117	91	28	22	21	15	19	2840	580	1710	27	16
10	119	95	27	22	21	15	20	2750	542	1600	27	16
11	125	97	26	22	21	14	20	2690	540	1640	24	15
12	126	95	26	22	21	14	21	2590	522	1580	21	13
13	122	90	25	22	21	14	40	2500	494	1510	18	11
14	118	91	25	22	20	14	100	2440	464	1450	18	10
15	115	91	25	22	20	14	450	2360	427	1340	16	10
16	115	92	25	22	19	14	700	2270	389	1250	12	9.7
17	120	92	25	22	19	14	850	2210	351	1160	11	10
18	112	91	25	22	19	14	1000	2140	311	1070	9.3	12
19	108	90	24	22	19	15	1200	2070	270	983	10	12
20	108	86	24	22	18	15	1500	1990	248	893	12	12
21	103	83	24	22	18	15	2050	1900	248	743	11	12
22	97	80	24	22	18	16	2340	1830	484	678	13	10
23	94	75	24	22	18	16	2490	1760	784	560	15	8.1
24	90	66	23	22	18	16	2600	1680	817	445	15	7.7
25	88	56	23	22	18	16	2710	1610	808	344	12	7.0
26	86	53	23	22	18	16	2820	1520	778	272	8.5	6.2
27	83	50	23	22	18	17	2900	1440	753	215	5.1	5.9
28	82	47	23	21	18	17	3100	1360	736	169	4.0	5.9
29	84	44	23	21	---	17	3150	1270	760	135	5.9	5.9
30	84	42	23	21	---	18	3090	1190	817	111	6.2	5.5
31	82	---	23	21	---	18	---	1110	---	95	6.6	---
TOTAL	3007	2355	834	680	551	486	33315	70540	18535	31326	817.6	374.4
MEAN	97.0	78.5	26.9	21.9	19.7	15.7	1111	2275	618	1011	26.4	12.5
MAX	126	97	40	23	21	18	3150	3210	1030	1710	93	24
MIN	68	42	23	21	18	14	18	1110	248	95	4.0	5.5
AC-FT	5960	4670	1650	1350	1090	964	66080	139900	36760	62140	1620	743

CAL YR 1974 TOTAL 190445.5 MEAN 522 MAX 5420 MIN 2.3 AC-FT 377700
WTR YR 1975 TOTAL 162821.0 MEAN 446 MAX 3210 MIN 4.0 AC-FT 323000

05112000 Roseau River below State ditch 51, near Caribou, Minn.

(International gaging station)

LOCATION.--Lat 48°58'54", long 96°27'46", in SE¼SW¼ sec.34, T.164 N., R.45 W., Kittson County, on left bank 400 ft (122 m) downstream from State ditch 51 (known locally as Caribou cutoff ditch) and 0.6 mi (1.0 km) west of Caribou.

DRAINAGE AREA.--1,570 mi² (4,066 km²), approximately.

PERIOD OF RECORD.--April to October 1917, April 1920 to current year (some winter records incomplete). Published as "at Caribou", prior to April 1929; as "below Cutoff ditch, near Caribou" April 1929 to September 1936. Records published for both sites April 1929 to September 1930. Monthly discharge only for some periods, published in WSP 1308.

GAGE.--Water-stage recorder. Datum of gage is 1,002.14 ft (305.452 m) above mean sea level, adjustment of 1928, by Geodetic Survey of Canada. Prior to Apr. 1, 1929, nonrecording gage at site at Caribou 0.6 mi (1.0 km) upstream at datum 0.95 ft (0.290 m) lower.

AVERAGE DISCHARGE.--18 years (1920-30, 1932-33, 1936-37, 1940-43, 1972-75), 313 ft³/s (8.864 m³/s), 226,800 acre-ft/yr (280 hm³/yr).

EXTREMES.--Current year: Maximum discharge, 2,540 ft³/s (71.9 m³/s) May 8, 9 (gage height, 9.39 ft or 2.862 m); minimum, 14 ft³/s (0.40 m³/s) Sept. 30 (gage height, 1.74 ft or 0.530 m).

Period of record: Maximum discharge, 4,080 ft³/s (116 m³/s) May 19, 1950 (gage height, 11.81 ft or 3.600 m); no flow Aug. 13, 1936.

Flood of 1916 is reported to have reached a stage of about 15.5 ft (4.72 m) at former site.

REMARKS.--Records good except those for winter periods, which are fair. Occasionally, at high stages, there is some natural diversion of flow above station to headwaters of Two Rivers. Water-quality records for the current year are published in Section 2 of this report.

COOPERATION.--This station is one of the international gaging stations maintained by the United States under agreement with Canada.

REVISIONS (WATER YEARS).--WSP 1308: 1938(M). WSP 1508: 1917(M), 1920, 1932(M), 1934-35(M). WSP 1913: 1954(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	97	118	66	32	30	20	22	2190	1890	1200	247	56
2	93	112	63	32	30	20	22	2280	1840	1250	264	57
3	91	103	60	31	29	19	22	2360	1790	1310	248	48
4	89	105	58	31	29	19	22	2430	1740	1300	224	53
5	89	105	56	31	29	18	22	2470	1710	1280	202	50
6	90	105	54	30	28	18	22	2510	1630	1250	167	45
7	92	112	53	30	28	18	22	2530	1550	1220	136	43
8	95	113	51	30	28	17	22	2540	1480	1200	118	38
9	98	113	50	30	28	17	22	2540	1400	1200	108	34
10	141	116	49	30	27	16	22	2520	1350	1200	97	32
11	165	119	48	29	27	16	22	2500	1270	1220	92	30
12	171	122	47	26	26	16	25	2480	1160	1250	89	29
13	171	143	46	24	26	16	30	2460	1060	1300	82	28
14	171	130	45	23	25	15	50	2440	960	1350	76	26
15	165	125	44	24	25	15	100	2420	850	1400	71	26
16	160	125	43	25	24	15	170	2410	743	1450	68	24
17	158	125	42	26	24	15	300	2410	650	1480	61	22
18	165	125	42	27	23	15	450	2400	600	1500	58	22
19	156	125	41	28	23	16	600	2380	550	1510	56	24
20	148	120	40	29	23	17	650	2350	500	1500	57	22
21	143	115	39	29	23	18	800	2300	500	1500	61	21
22	140	110	38	30	22	19	1100	2260	550	1470	62	19
23	131	100	38	30	22	20	1300	2240	650	1440	65	18
24	124	95	37	30	21	21	1420	2240	750	1390	68	19
25	118	88	36	30	21	22	1480	2210	850	1320	64	18
26	113	83	36	30	21	22	1560	2160	900	1220	63	16
27	108	80	35	30	21	22	1680	2120	1000	1060	54	17
28	103	76	35	30	20	22	1860	2100	1050	843	46	17
29	101	72	34	30	---	22	2000	2050	1100	834	40	16
30	101	69	33	30	---	22	2080	2000	1150	480	34	16
31	110	---	33	30	---	22	---	1950	---	365	36	---
TOTAL	3895	3249	1392	897	703	570	17897	72250	33224	38088	3165	888
MEAN	126	108	44.9	28.9	25.1	18.4	597	2331	1108	1229	102	29.6
MAX	171	143	66	32	30	22	2080	2540	1890	1510	247	57
MIN	89	69	33	23	20	15	22	1950	500	365	34	16
AC-FT	7730	6440	2760	1780	1390	1130	35500	143300	65910	75550	6280	1760

CAL YR 1974 TOTAL 209567 MEAN 574 MAX 2700 MIN 13 AC-FT 415700
WTR YR 1975 TOTAL 176223 MEAN 483 MAX 2540 MIN 15 AC-FT 349500

NOTE.--No gage-height record June 18 to July 21.

05124480 Kawishiwi River near Ely, Minn.

(Hydrologic bench-mark station)

LOCATION.--Lat 47°55'22", long 91°32'06", in SE¼ sec.24, T.63 N., R.10 W., Lake County, on left bank upstream from rapids, 2 mi (3 km) upstream from South Kawishiwi River, 2.2 mi (3.5 km) southwest of Fernberg Lookout Tower and 14 mi (23 km) east of Ely.

DRAINAGE AREA.--253 mi² (655 km²).

PERIOD OF RECORD.--June 1966 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,450 ft (442 m), from topographic map.

AVERAGE DISCHARGE.--9 years, 241 ft³/s (6.825 m³/s), 12.94 in/yr (329 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,050 ft³/s (29.7 m³/s) May 8 (gage height, 5.32 ft or 1.622 m); minimum, 30 ft³/s (0.85 m³/s) Sept. 2 (gage height, 2.77 ft or 0.844 m).

Period of record: Maximum discharge, 1,540 ft³/s (43.6 m³/s) Apr. 29, 1969 (gage height, 5.88 ft or 1.792 m); minimum, 24 ft³/s (0.68 m³/s) Sept. 28, 29, 1966; minimum gage height, 2.70 ft (0.823 m) Feb. 23-29, 1968.

REMARKS.--Records good. Water-quality records for the current year are published in Section 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	85	127	146	113	110	74	57	626	365	189	77	33
2	85	132	144	111	108	74	54	716	340	197	74	31
3	85	137	144	115	108	72	56	795	318	197	70	38
4	85	137	144	115	107	69	56	876	296	192	73	34
5	91	137	143	115	105	69	56	946	291	184	69	33
6	94	137	143	111	105	69	57	996	291	179	64	31
7	97	137	141	110	103	69	59	1030	279	172	60	41
8	99	137	135	106	102	68	62	1040	266	165	57	44
9	102	137	128	107	99	66	62	1030	255	150	52	40
10	102	137	130	107	100	66	62	1020	247	144	48	39
11	102	141	134	106	99	66	62	996	236	143	47	38
12	102	146	134	106	97	66	62	974	270	139	47	37
13	102	146	134	105	94	65	62	966	313	137	46	36
14	107	146	134	104	92	64	60	904	313	132	45	36
15	108	146	134	104	91	64	63	869	313	128	42	33
16	108	148	134	103	91	65	69	842	313	127	40	33
17	110	148	130	102	90	65	76	795	304	123	38	33
18	110	148	128	102	88	65	84	761	296	116	38	37
19	110	148	127	101	88	65	88	709	285	111	37	40
20	110	150	127	100	86	66	91	683	296	111	37	40
21	108	152	124	100	85	66	94	640	296	107	39	40
22	105	152	125	100	84	66	102	602	283	102	38	40
23	105	152	125	100	82	65	122	571	266	97	40	41
24	102	152	125	102	81	66	139	542	262	94	42	42
25	99	152	125	110	81	68	158	513	247	99	42	42
26	100	148	125	113	78	65	184	486	236	97	40	42
27	100	150	123	111	78	64	240	443	216	94	39	42
28	100	152	120	111	77	66	318	417	206	90	39	42
29	111	154	120	113	---	66	407	407	200	86	40	42
30	115	150	115	113	---	63	519	387	194	84	37	44
31	116	---	113	110	---	60	---	373	---	78	37	---
TOTAL	3155	4338	4054	3326	2609	2064	3581	22935	8289	4069	1494	1146
MEAN	102	145	131	107	93.2	66.6	119	740	276	131	48.2	38.2
MAX	116	154	146	115	110	74	519	1040	365	197	77	44
MIN	85	127	113	100	77	60	54	373	194	78	37	31
CFSM	.40	.57	.52	.42	.37	.26	.47	2.92	1.09	.52	.19	.15
IN.	.46	.64	.60	.49	.38	.30	.53	3.37	1.22	.60	.22	.17

CAL YR 1974 TOTAL 81582 MEAN 224 MAX 883 MIN 51 CFSM .89 IN 12.00
WTR YR 1975 TOTAL 61066 MEAN 167 MAX 1040 MIN 31 CFSM .66 IN 8.98

05124990 Filson Creek near Ely, Minn.

LOCATION.--Lat 47°50'05", long 91°40'27", in SE¼SW¼ sec.24, T.61 N., R.10 W., Lake County, on right bank 25 ft (7.6 m) upstream from culverts on Forest Route 181, also known as Spruce Road, 0.8 mi (1.3 km) upstream from mouth, and 10 mi (16 km) southeast of Ely.

PERIOD OF RECORD.--October 1974 to September 1975.

GAGE.--Water-stage recorder. Altitude of gage is 1,440 ft (439 m), from topographic map.

EXTREMES.--Maximum discharge, 129 ft³/s (3.65 m³/s) Apr. 25 (gage height, 6.99 ft or 2.131 m); maximum gage height, 7.19 ft (2.192 m) Apr. 25 (backwater from ice); no flow Aug. 15-20.

REMARKS.--Records good except those for winter periods, which are fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.78	4.4	1.2	.87	.80	.69	.63	68	2.5	2.0	.11	.23
2	.72	6.8	1.2	.90	.79	.68	.63	59	2.0	8.1	.08	.19
3	.68	7.6	1.1	.89	.75	.67	.63	52	1.8	9.5	.05	1.5
4	.67	8.1	1.1	.85	.72	.66	.63	46	1.6	7.6	.04	1.4
5	.84	7.7	1.1	.82	.70	.65	.62	40	3.5	5.2	.04	.97
6	1.2	7.2	1.0	.78	.75	.65	.62	36	4.5	7.5	.02	.80
7	1.6	6.4	1.0	.75	.80	.64	.62	32	4.5	6.7	.02	2.1
8	1.5	6.2	.97	.72	.85	.64	.62	28	3.4	4.3	.01	3.0
9	1.4	5.6	.94	.69	.89	.63	.62	25	2.5	2.5	.01	1.6
10	1.3	4.9	.92	.66	.90	.63	.63	22	2.2	1.7	.02	1.5
11	1.3	4.4	.90	.64	.90	.62	.65	20	2.3	1.5	.02	1.5
12	1.2	4.0	.88	.61	.90	.62	.71	16	15	1.3	.02	1.3
13	1.1	3.7	.85	.59	.90	.62	1.0	14	33	1.0	.02	1.3
14	1.0	3.4	.84	.57	.90	.62	2.0	13	33	.91	.01	1.2
15	.98	3.1	.82	.55	.90	.63	3.0	13	32	.85	0	1.1
16	.92	2.9	.80	.54	.89	.64	4.5	13	30	.72	0	.95
17	.87	2.7	.79	.53	.87	.65	6.5	11	26	.59	0	.85
18	.87	2.5	.77	.51	.86	.67	9.0	11	22	.49	0	.90
19	.88	2.4	.76	.50	.83	.76	12	9.2	18	.46	0	1.2
20	.91	2.2	.75	.50	.81	.88	17	8.3	15	.42	0	1.5
21	.96	2.0	.74	.50	.80	.90	24	7.4	15	.40	.02	2.2
22	1.1	1.9	.73	.51	.78	.85	33	6.4	13	.32	.05	2.5
23	1.2	1.8	.73	.52	.76	.80	55	6.0	10	.29	.29	2.8
24	1.1	1.7	.74	.54	.75	.75	80	5.4	8.0	.31	.55	3.0
25	1.1	1.6	.74	.57	.74	.70	118	4.6	5.7	.35	.53	3.0
26	1.5	1.5	.74	.60	.72	.66	116	3.8	4.0	.43	.44	2.1
27	2.1	1.4	.75	.65	.71	.65	101	3.2	3.1	.49	.42	1.7
28	3.0	1.4	.76	.70	.70	.65	92	3.2	2.2	.44	.42	1.3
29	3.8	1.3	.78	.76	---	.65	80	3.2	1.9	.29	.42	1.0
30	3.6	1.3	.80	.80	---	.64	73	3.2	1.9	.19	.40	.95
31	3.3	---	.83	.80	---	.64	---	2.8	---	.14	.28	---
TOTAL	43.48	111.9	27.03	20.42	22.67	21.14	834.61	585.7	319.6	66.99	4.29	45.64
MEAN	1.40	3.73	.87	.66	.81	.68	27.8	18.9	10.7	2.16	.14	1.52
MAX	3.8	8.1	1.2	.90	.90	.90	118	68	33	9.5	.55	3.0
MIN	.67	1.3	.73	.50	.70	.62	.62	2.8	1.6	.14	0	.19

WTR YR 1975 TOTAL 2103.47 MEAN 5.76 MAX 118 MIN 0

05126000 Dunka River near Babbitt, Minn.

LOCATION.--Lat 47°41'55", long 91°52'05", in NW¼NE¼ sec.9, T.60 N., R.12 W., St. Louis County, on left bank, 1.8 mi (2.9 km) upstream from mouth, and 3.8 mi (6.1 km) southeast of Babbitt.

DRAINAGE AREA.--53.0 mi² (137 km²).

PERIOD OF RECORD.--October 1951 to September 1962, February to September 1975.

GAGE.--Water-stage recorder. Datum of gage is 1,488.98 ft (453.841 m) above mean sea level, datum of 1929.

AVERAGE DISCHARGE.--11 years (1951-62), 37.4 ft³/s (1.059 m³/s).

EXTREMES.--Maximum discharge during period February to September 1975, 390 ft³/s (11.0 m³/s) Apr. 27 (gage height, 6.86 ft or 2.091 m); minimum daily, 1.1 ft³/s (0.031 m³/s) Aug. 16, 18; minimum gage height, 4.01 ft (1.222 m) Mar. 15.

Period of record: Maximum discharge, 691 ft³/s (19.6 m³/s) Apr. 16, 1954 (gage height, 7.84 ft or 2.390 m); minimum, 0.60 ft³/s (0.017 m³/s) Aug. 20-22, 1961; minimum gage height, 3.64 ft (1.109 m) Aug. 21, 1961.

REMARKS.--Records fair. Natural flow of stream affected by continually changing iron-mining activities that include diversions for iron ore processing, and mine pit dewatering. The amount of water pumped to stream from pit dewatering generally exceeds diversions for ore processing.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1					4.1	4.4	13	315	33	35	1.8	9.8
2					4.0	3.2	21	292	30	61	1.7	14
3					3.9	2.7	12	267	27	91	2.0	23
4					3.9	2.6	13	247	23	90	3.2	26
5					3.8	4.0	12	220	29	75	2.6	27
6					3.8	5.0	17	200	44	82	1.8	21
7					3.7	5.6	15	182	50	82	1.4	25
8					3.8	4.2	22	159	45	77	1.9	32
9					3.8	3.0	33	150	39	66	1.8	33
10					3.9	2.6	28	132	34	54	2.1	27
11					4.1	2.4	35	114	32	44	2.6	26
12					3.9	2.8	73	103	70	34	2.3	23
13					3.7	3.6	74	96	198	26	2.0	21
14					3.7	2.7	66	90	292	22	1.5	25
15					3.8	2.4	74	85	274	17	1.5	21
16					3.9	3.1	85	84	236	15	1.1	22
17					4.3	5.0	102	76	198	9.5	1.7	22
18					4.6	6.4	118	72	160	8.3	1.1	26
19					3.5	5.4	134	66	131	5.9	1.6	45
20					4.0	9.4	143	62	110	5.0	1.7	54
21					5.0	30	150	58	97	4.2	5.4	62
22					5.0	52	166	53	85	2.6	7.9	61
23					3.9	60	218	48	76	2.7	8.8	66
24					4.2	67	294	42	66	5.1	10	77
25					3.3	62	342	35	55	4.5	11	72
26					3.5	52	379	34	49	3.5	12	66
27					4.5	34	382	33	42	2.3	12	58
28					5.0	16	360	27	34	2.9	10	47
29					---	11	347	28	38	2.5	10	42
30					---	9.4	331	26	37	2.2	8.8	59
31					---	9.6	---	27	---	2.0	9.6	---
TOTAL					112.6	483.5	4059	3423	2638	934.2	142.9	1112.8
MEAN					4.02	15.6	135	110	87.9	30.1	4.61	37.1
MAX					5.0	67	382	315	292	91	12	77
MIN					3.3	2.4	12	26	23	2.0	1.1	9.8

05126500 Bear Island River near Ely, Minn.

LOCATION.--Lat 47°49'56", long 91°50'12", in SE¼SW¼ sec.23, T.62 N., R.12 W., St. Louis County, on right bank, 10 ft (3 m) downstream from bridge on State Highway 1, 1.2 mi (1.9 km) upstream from mouth and 5.0 mi (8.0 km) south of Ely.

DRAINAGE AREA.--68.5 mi² (177.4 km²).

PERIOD OF RECORD.--October 1952 to September 1962, March to September 1975.

GAGE.--Water-stage recorder. Datum of gage is 1,388.86 ft (423.325 m) above mean sea level, datum of 1929.

AVERAGE DISCHARGE.--10 years (1952-62), 41.6 ft³/s (1.178 m³/s), 8.25 in/yr (210 mm/yr).

EXTREMES.--Maximum discharge during period March to September 1975, 358 ft³/s (10.1 m³/s) May 2 (gage height, 7.05 ft or 2.149 m); minimum, 4.4 ft³/s (0.12 m³/s) Aug. 20 (gage height, 5.01 ft or 1.527 m).

Period of record: Maximum discharge, 423 ft³/s (12.0 m³/s) May 3, 1954 (gage height, 7.03 ft or 2.143 m); maximum gage height, 7.20 ft (2.195 m) Apr. 24, 25, 1961; minimum discharge, 0.30 ft³/s (0.008 m³/s) Oct. 11, 12, 1961; minimum gage height, 4.33 ft (1.320 m) Sept. 15, 16, 1955.

REMARKS.--Records fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						20	20	344	76	79	35	7.1
2						20	20	353	73	91	31	6.7
3						20	19	344	71	94	28	14
4						20	20	340	66	97	23	12
5						20	20	326	69	99	19	11
6						20	19	317	66	107	17	11
7						20	18	303	63	107	15	16
8						20	18	289	61	109	13	16
9						20	17	269	57	105	10	14
10						20	16	253	55	99	8.1	14
11						20	16	234	55	91	11	13
12						20	16	220	79	86	9.4	13
13						20	17	205	112	80	8.5	13
14						20	19	193	118	76	7.3	13
15						20	22	189	126	70	6.8	12
16						20	26	183	135	63	6.5	11
17						21	31	173	136	70	6.0	10
18						21	38	165	145	98	5.3	12
19						22	47	157	159	103	4.8	14
20						21	60	150	158	91	4.5	14
21						20	74	142	155	86	5.0	16
22						19	88	131	152	79	4.8	16
23						19	119	123	142	76	5.4	19
24						18	160	115	132	72	6.0	19
25						18	211	106	120	67	6.5	19
26						19	258	99	110	63	6.7	19
27						19	287	92	102	58	6.6	18
28						19	297	90	94	53	6.9	18
29						20	304	85	89	48	6.9	18
30						20	330	82	84	43	12	20
31						19	---	78	---	40	7.7	---
TOTAL						615	2607	6150	3060	2500	343.7	428.8
MEAN						19.8	86.9	198	102	80.6	11.1	14.3
MAX						22	330	353	159	109	35	20
MIN						18	16	78	55	40	4.5	6.7
CFSM						.29	1.27	2.89	1.49	1.18	.16	.21
IN.						.33	1.42	3.34	1.66	1.36	.19	.23

05127000 Kawishiwi River near Winton, Minn.

LOCATION.--Lat 47°56'05", long 91°45'50", in NE¼NW¼ sec.20, T. 63 N., R.11 W., Lake County, at powerplant of Minnesota Power & Light Co., just upstream from Fall Lake, and 1.8 mi (2.9 km) east of Winton.

DRAINAGE AREA.--1,200 mi^2 (3,110 km^2), approximately.

PERIOD OF RECORD.--June 1905 to June 1907, October 1912 to September 1919 (fragmentary), September 1923 to current year. Monthly discharge only for some periods, published in WSP 1308.

AVERAGE DISCHARGE (UNADJUSTED).--56 years (1905-06, 1915-17, 1918-19, 1923-75), 1,028 ft^3/s (29.11 m^3/s), 11.63 in/yr (295 mm/yr).

EXTREMES.--Current year: Maximum daily discharge, 5,350 ft^3/s (152 m^3/s) May 6; minimum daily, 65 ft^3/s (1.84 m^3/s) Sept. 1.
Period of record: Maximum daily discharge, 16,000 ft^3/s (453 m^3/s) May 18, 1950; no flow at times.

REMARKS.--Records fair. Daily discharge computed from powerplant records. Flow regulated by powerplant and by Camp Six, Bald Eagle, Gabbro, Little Gabbro, Birch, White Iron, South Farm, and Garden Lakes.

COOPERATION.--Records collected by Minnesota Power & Light Co., under general supervision of Geological Survey, in connection with a Federal Power Commission project.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	298	596	630	498	597	329	399	3630	1050	1240	397	65
2	298	693	597	466	597	459	464	3810	1100	1400	265	331
3	266	635	613	531	565	329	413	4520	1020	1520	248	597
4	266	731	594	434	597	394	347	5000	1020	1480	265	487
5	331	697	529	499	662	367	399	5240	1140	1420	297	266
6	298	697	561	499	597	394	399	5350	1200	1290	297	266
7	298	752	529	499	662	329	399	5230	1230	1160	265	528
8	331	729	561	531	630	394	349	5300	1230	1060	233	403
9	266	680	529	499	597	394	345	5230	1070	1020	265	266
10	298	662	529	531	597	426	335	5230	1040	1090	297	266
11	298	694	529	596	662	394	367	5120	1090	1060	265	234
12	266	662	529	459	597	394	367	5170	1480	1060	297	298
13	266	630	529	531	597	394	399	5320	1960	1060	265	331
14	363	662	529	531	565	394	399	4340	2480	995	265	266
15	367	694	394	531	660	394	432	4020	2610	995	265	298
16	367	662	529	531	531	362	548	3690	2580	895	265	266
17	334	662	529	564	595	329	595	3490	2580	863	129	266
18	399	662	529	634	563	394	754	3420	2290	960	265	331
19	302	662	529	499	595	426	783	3470	2320	928	265	479
20	399	662	529	515	531	426	815	3040	2210	863	293	371
21	363	662	529	663	438	426	912	2810	2210	796	297	500
22	266	662	297	598	560	426	976	2250	2200	762	265	403
23	349	662	594	566	571	491	1230	2090	2410	755	265	500
24	399	630	565	566	394	471	1560	2190	1600	501	586	467
25	302	630	362	727	459	510	1430	2210	1250	528	339	432
26	399	662	464	662	426	478	1770	2030	1230	431	399	371
27	381	662	529	630	394	446	2420	2010	1140	397	350	247
28	351	662	496	565	394	558	2340	1900	960	365	298	263
29	496	662	161	630	---	367	2880	1670	960	397	266	331
30	500	630	531	630	---	367	2980	1380	1320	397	266	506
31	500	---	531	630	---	399	---	1120	---	365	197	---
TOTAL	10617	20048	15866	17245	15633	12661	27806	111280	47960	28053	8931	10635
MEAN	342	668	512	556	558	408	927	3590	1599	905	288	355
MAX	500	752	630	727	662	558	2980	5350	2610	1520	586	597
MIN	266	596	161	434	394	329	335	1120	960	365	129	65
/	+86	0	-103	-145	-220	-113	+348	+262	+35	-110	-96	+162
MEAN ≠	428	668	409	411	338	295	1275	3852	1634	795	192	517
CFSM ≠	.36	.56	.34	.34	.28	.25	1.06	3.21	1.36	.66	.16	.43
IN. ≠	.41	.62	.39	.40	.29	.28	1.19	3.70	1.52	.76	.18	.48

CAL YR 1974 TOTAL 378,853 MEAN 1,038 MAX 4,570 MIN 82 MEAN ≠ 1,180 CFSM ≠ 0.98 IN. ≠ 13.35
WTR YR 1975 TOTAL 326,735 MEAN 895 MAX 5,350 MIN 65 MEAN ≠ 904 CFSM ≠ 0.75 IN. ≠ 10.23

/ Change in contents, equivalent in cubic feet per second, in Camp Six, Bald Eagle, Gabbro, Little Gabbro, Birch, White Iron, Farm, South Farm, and Garden Lakes.

≠ Adjusted for change in reservoir contents.

05127205 Burntside River near Ely, Minn.

LOCATION.--Lat 47°54'55", long 91°56'59", in NE¼NE¼ sec.26, T.63 N., R.13 W., St. Louis County, on downstream handrail of bridge on County Road 88, 2.5 mi (4.0 km) upstream from mouth, 4 mi (6 km) northwest of Ely and 5 mi (8 km) downstream from outlet of Burntside Lake.

PERIOD OF RECORD.--May 1967 to current year.

GAGE.--Nonrecording gage. Altitude of gage is 1,340 ft (408 m), from topographic map.

AVERAGE DISCHARGE.--8 years, 63.7 ft^3/s (1.804 m^3/s)

EXTREMES.--Current year: Maximum discharge, 244 ft^3/s (6.91 m^3/s) May 4 (gage height, 7.50 ft or 2.286 m); minimum, 8.5 ft^3/s (0.24 m^3/s) Sept. 17 (gage height, 5.88 ft or 1.792 m).

Period of record: Maximum discharge, 455 ft^3/s (12.9 m^3/s) June 12, 1970 (gage height, 8.59 ft or 2.618 m, from floodmark); minimum daily discharge, 0.8 ft^3/s (0.023 m^3/s) Oct. 6, 7, 1967.

REMARKS.--Records fair.

COOPERATION.--Gage readings furnished by the Water Quality Office, Environmental Protection Agency.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	53	28	27	35	32	30	225	87	83	47	14
2	28	53	27	28	35	32	30	235	90	92	45	13
3	27	52	27	28	35	32	30	234	81	93	43	14
4	25	51	27	28	34	32	29	240	78	98	42	13
5	28	49	27	28	34	31	29	237	77	99	41	12
6	32	49	27	28	34	31	29	235	74	99	40	12
7	35	46	27	26	34	31	29	235	73	97	37	12
8	34	47	27	28	34	31	29	220	68	96	32	15
9	35	46	27	28	34	31	29	211	67	91	28	15
10	33	44	27	28	34	30	29	199	65	88	23	14
11	34	43	27	32	33	30	29	194	63	82	22	13
12	34	45	27	37	33	29	29	184	85	82	22	12
13	35	43	27	39	33	29	30	179	97	79	21	12
14	36	47	27	40	33	29	32	174	99	75	21	12
15	36	49	27	41	33	28	35	181	106	72	20	10
16	35	48	27	40	33	28	40	179	103	68	18	10
17	34	46	27	40	33	28	47	170	112	66	16	8.5
18	34	44	27	39	33	28	53	167	110	64	16	9.7
19	34	42	27	39	33	29	57	164	108	67	15	11
20	33	40	27	36	33	29	64	159	105	71	13	12
21	33	38	27	38	33	30	73	153	102	71	10	13
22	31	37	27	37	33	30	80	149	96	72	12	13
23	32	36	27	37	33	31	101	144	94	68	16	14
24	30	34	27	36	33	31	119	135	93	70	17	15
25	29	33	27	36	33	32	137	130	92	70	17	14
26	29	32	27	36	33	32	158	115	89	64	15	13
27	29	31	27	36	32	32	181	107	87	63	14	13
28	28	30	27	35	32	31	193	107	86	57	15	12
29	28	29	27	35	---	31	203	101	84	55	16	12
30	30	29	27	35	---	31	216	98	83	51	15	12
31	43	---	27	35	---	30	---	94	---	48	15	---
TOTAL	994	1266	838	1060	935	941	2170	5355	2654	2350	724	375.2
MEAN	32.1	42.2	27.0	34.2	33.4	30.4	72.3	173	88.5	75.8	23.4	12.5
MAX	43	53	28	41	35	32	216	240	112	99	47	15
MIN	25	29	27	27	32	28	29	94	63	48	10	8.5

CAL YR 1974 TOTAL 21824.0 MEAN 59.8 MAX 296 MIN 15
WTR YR 1975 TOTAL 19662.2 MEAN 53.9 MAX 240 MIN 8.5

05127207 Bjorkman's Creek near Ely, Minn.

LOCATION.--Lat 47°55'31", long 91°53'26", in NW¼SE¼ sec.20, T.63 N., R.12 W., St. Louis County, on right bank 5 ft (2 m) downstream from culverts, on County Highway 88, at mouth, 2.5 mi (4.0 km) northwest of Ely, Minn.

DRAINAGE AREA.--1.36 mi² (3.52 km²).

PERIOD OF RECORD.--July 1972 to current year.

GAGE.--Nonrecording gage. Altitude of gage is 1,340 ft (408 m), from topographic map.

EXTREMES.--Current year: Maximum discharge, 23 ft³/s (0.66 m³/s) Apr. 25 (gage height, 2.18 ft or 0.664 m); no flow July 31 to Sept. 17.
Period of record: Maximum discharge, 47 ft³/s (1.33 m³/s) Oct. 10, 1973 (gage height, 2.62 ft or 0.799 m); no flow on many days.
A discharge of 60.3 ft³/s (1.71 m³/s) was measured June 10, 1970.

REMARKS.--Records fair.

COOPERATION.--Gage readings furnished by the Water Quality Office, Environmental Protection Agency.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.16	1.7	.18	.07	.04	.02	.23	9.3	.41	.25		0
2	.25	5.0	.17	.07	.04	.02	.23	8.2	.38	1.3		0
3	.13	4.0	.15	.07	.04	.02	.23	7.5	.41	.83		0
4	.13	3.3	.13	.07	.04	.02	.23	5.8	.51	.48		0
5	.98	2.6	.12	.07	.04	.02	.22	5.0	.83	.72		0
6	.92	2.3	.11	.07	.04	.02	.21	4.5	.76	1.1		0
7	.60	1.9	.11	.07	.04	.02	.20	3.9	.64	.88		0
8	.68	1.7	.10	.07	.04	.02	.20	3.6	.41	.60		0
9	.56	1.6	.10	.07	.04	.02	.21	3.0	.33	.41		0
10	.52	1.4	.10	.07	.04	.02	.21	2.5	.35	.24		0
11	.41	1.2	.09	.07	.03	.02	.23	2.1	.41	.25		0
12	.49	1.1	.09	.07	.03	.02	.30	1.9	4.4	.20		0
13	.56	.94	.09	.07	.03	.02	.40	1.6	9.9	.18		0
14	.64	.73	.09	.06	.03	.02	.52	2.5	6.8	.16		0
15	.73	.64	.09	.06	.03	.03	1.1	2.5	4.6	.13		0
16	.88	.57	.09	.06	.03	.04	1.5	2.2	3.6	.14		0
17	.78	.50	.08	.06	.03	.06	2.2	1.8	3.2	.13		0
18	.68	.44	.08	.06	.03	.08	3.4	1.6	2.5	.11		.01
19	.62	.41	.08	.06	.03	.10	8.2	1.5	1.9	.10		.09
20	.57	.41	.08	.06	.03	.12	9.6	1.3	1.9	.10		.12
21	.52	.36	.08	.06	.02	.14	8.0	1.1	1.7	.10		.15
22	.44	.33	.08	.05	.02	.15	4.9	.88	1.6	.10		.15
23	.41	.31	.08	.05	.02	.16	17	.60	1.2	.07		.20
24	.35	.29	.07	.05	.02	.16	19	.48	.83	.09		.15
25	.31	.27	.07	.05	.02	.17	23	.37	.68	.09		.13
26	.36	.23	.07	.05	.02	.18	16	.29	.48	.09		.13
27	.41	.21	.07	.05	.02	.20	17	.31	.35	.08		.13
28	.48	.20	.07	.05	.02	.20	17	.36	.31	.04		.13
29	.52	.20	.07	.05	---	.21	12	.33	.30	.02		.13
30	.64	.19	.07	.05	---	.22	10	.52	.27	.03		.17
31	.73	---	.07	.05	---	.23	---	.46	---	0		---
TOTAL	16.46	35.05	2.93	1.89	.86	2.73	181.32	78.08	52.08	9.01	0	1.69
MEAN	.53	1.17	.095	.061	.031	.088	6.04	2.52	1.74	.29	0	.056
MAX	.98	5.0	.18	.07	.04	.23	23	9.3	9.9	1.3	0	.20
MIN	.13	.19	.07	.05	.02	.02	.20	.29	.27	0	0	0
CFSM	.39	.86	.07	.04	.02	.06	4.44	1.85	1.28	.21	0	.04
IN.	.45	.96	.08	.05	.02	.07	4.96	2.14	1.44	.25	0	.05

CAL YR 1974 TOTAL 389.66 MEAN 1.07 MAX 21 MIN 0 CFSM .79 IN 10.66
WTR YR 1975 TOTAL 382.10 MEAN 1.05 MAX 23 MIN 0 CFSM .77 IN 10.47

05127210 Armstrong Creek near Ely, Minn.

LOCATION.--Lat 47°53'48", long 91°55'50", in SW¼NE¼ sec.36, T.63 N., R.13 W., St. Louis County, near right bank 50 ft (15 m) upstream from culvert on County Road 88, 1.2 mi (1.9 km) upstream from mouth and 2.5 mi (4.0 km) southwest of Ely.

DRAINAGE AREA.--5.29 mi^2 (13.70 km^2).

PERIOD OF RECORD.--May 1967 to current year.

GAGE.--Nonrecording gage and crest-stage gage. Altitude of gage is 1,365 ft (416 m), from topographic map. Prior to Oct. 1, 1969, at site 100 ft (30 m) downstream at same datum.

AVERAGE DISCHARGE.--8 years, 5.11 ft^3/s (0.145 m^3/s), 13.12 in/yr (333 mm/yr).

EXTREMES.--Current year: Maximum discharge, 50 ft^3/s (1.42 m^3/s) Apr. 25 (gage height, 4.22 ft or 1.286 m); minimum, 0.19 ft^3/s (0.005 m^3/s) Sept. 18 (gage height, 1.30 ft or 0.396 m).

Period of record: Maximum discharge, 131 ft^3/s (3.71 m^3/s) May 21, 1970 (gage height, 5.88 ft or 1.792 m, from floodmark); no flow Feb. 28 to Mar. 6, 1968.

REMARKS.--Records poor.

COOPERATION.--Gage readings furnished by Water Quality Office, Environmental Protection Agency.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.89	7.3	1.1	.65	.78	.90	1.1	32	1.0	1.1	.58	.30
2	.85	9.0	1.1	.65	.76	.89	1.0	29	1.4	6.5	.67	.30
3	.82	6.5	1.2	.64	.74	.88	1.0	26	7.8	3.2	.64	.49
4	.79	5.2	1.1	.64	.72	.88	1.0	23	1.9	1.0	.61	.43
5	1.6	4.3	.97	.64	.70	.88	.98	21	4.3	2.6	.61	.35
6	2.5	4.0	.85	.64	.68	.88	.94	18	2.8	3.6	.61	1.6
7	3.4	3.0	.82	.64	.66	.88	.93	15	2.2	2.1	.85	1.6
8	3.0	2.6	.79	.64	.65	.87	.97	14	1.3	4.9	.67	.82
9	2.8	2.4	.76	.64	.64	.86	.89	11	1.0	3.0	.70	.49
10	2.6	2.2	.76	.67	.62	.83	.89	7.6	1.0	1.4	.51	.38
11	2.5	2.0	.76	.86	.61	.78	.89	7.9	4.2	1.0	.84	.28
12	2.8	2.2	.75	1.2	.61	.72	1.0	6.5	25	1.5	.82	.28
13	3.1	2.2	.74	1.5	.61	.68	1.4	6.0	44	1.1	.43	.30
14	3.4	2.2	.73	1.6	.60	.66	1.8	11	36	1.0	.38	.73
15	3.7	2.1	.72	1.5	.60	.66	3.4	16	23	.70	.38	.35
16	3.2	2.0	.71	1.4	.61	.67	5.5	13	16	.70	.35	.42
17	2.8	1.9	.70	1.3	.63	.68	7.6	9.8	11	1.2	.33	.24
18	2.4	1.9	.70	1.3	.65	1.3	12	8.1	8.8	.97	.40	.81
19	2.2	1.8	.70	1.2	.66	2.4	17	6.8	6.5	.91	.38	.85
20	1.9	1.2	.69	1.1	.68	2.6	22	5.4	7.0	.85	.36	1.2
21	1.7	1.7	.69	1.1	.69	2.1	24	5.2	7.6	.70	.38	1.0
22	1.7	1.6	.68	1.1	.70	1.8	25	5.1	6.0	.70	.33	1.6
23	1.6	1.5	.68	1.0	.70	1.7	36	3.3	4.6	.67	.70	1.9
24	1.6	1.5	.67	.98	.71	1.6	39	2.1	3.2	.70	.57	1.3
25	1.6	1.4	.67	.95	.72	1.5	45	1.4	2.6	.66	.47	1.0
26	2.0	1.3	.67	.93	.76	1.4	40	.70	2.1	.61	.82	.97
27	2.4	1.3	.66	.90	.90	1.3	38	3.1	1.6	.49	.33	.82
28	2.8	1.2	.66	.88	.92	1.2	40	2.6	1.4	.47	.38	.84
29	3.2	1.2	.66	.85	---	1.2	36	1.3	1.5	.43	.35	.61
30	4.2	1.2	.65	.83	---	1.1	34	1.2	1.4	.40	.35	.64
31	3.6	---	.65	.80	---	1.1	---	1.2	---	.58	.35	---
TOTAL	73.65	79.9	23.99	29.73	19.31	35.90	439.29	314.30	238.2	46.32	15.95	23.10
MEAN	2.38	2.66	.77	.96	.69	1.16	14.6	10.1	7.94	1.49	.51	.77
MAX	4.2	9.0	1.2	1.6	.92	2.6	45	32	44	6.5	.85	1.9
MIN	.79	1.2	.65	.64	.60	.66	.89	.70	1.0	.40	.33	.24
CFSM	.45	.50	.15	.18	.13	.22	2.76	1.91	1.50	.28	.10	.15
IN.	.52	.56	.17	.21	.14	.25	3.09	2.21	1.68	.33	.11	.16

CAL YR 1974 TOTAL 1601.94 MEAN 4.39 MAX 43 MIN .06 CFSM .83 IN 11.27
WTR YR 1975 TOTAL 1339.64 MEAN 3.67 MAX 45 MIN .24 CFSM .69 IN 9.42

05127215 Longstorff Creek near Ely, Minn.

LOCATION.--Lat 47°53'33", long 91°54'55", in SE¼SW¼ sec.31, T.63 N., R.12 W., St. Louis County, left bank on downstream side of culvert on county road, 500 ft (152 m) downstream from U.S. Highway 169, 0.7 mi (1.1 km) upstream from mouth, 1.5 mi (2.4 km) southwest of Ely and 2.5 mi (4.0 km) downstream from outlet of Mitchell Lake.

DRAINAGE AREA.--8.84 mi² (22.90 km²).

PERIOD OF RECORD.--May 1967 to current year.

GAGE.--Nonrecording gage and crest-stage gage. Datum of gage is 1,360.67 ft (414.732 m) above mean sea level, datum of 1929 (levels by Minnesota Highway Department).

AVERAGE DISCHARGE.--8 years, 8.56 ft³/s (0.242 m³/s), 13.15 in/yr (334 mm/yr).

EXTREMES.--Current year: Maximum discharge, 86 ft³/s (2.44 m³/s) Apr. 27 (gage height, 3.45 ft or 1.052 m); minimum, 0.04 ft³/s (0.001 m³/s) Aug. 18, 20 (gage height, 0.41 ft or 0.125 m).
Period of record: Maximum discharge, 230 ft³/s (6.51 m³/s) June 10, 1970 (gage height, 6.52 ft or 1.987 m, from floodmark); no flow on many days in 1968 and May 7, 1969.

REMARKS.--Records fair.

COOPERATION.--Gage readings furnished by Water Quality Office, Environmental Protection Agency.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.60	12	1.5	.90	2.0	.95	2.6	62	2.8	2.5	.98	.15
2	.68	15	1.5	.90	2.0	.95	2.5	55	1.9	9.8	.86	.09
3	.62	9.0	1.3	.90	1.9	.95	2.4	52	2.1	6.4	.74	.51
4	.56	6.4	1.3	.90	1.9	.95	2.3	43	1.4	4.9	.68	.80
5	.90	4.9	1.2	.90	1.8	.95	2.2	37	4.2	8.4	.68	.41
6	1.5	3.9	1.2	.90	1.7	.95	2.2	33	4.0	12	.51	3.1
7	2.1	3.6	1.2	.90	1.7	.95	2.1	27	3.7	9.6	.46	3.1
8	2.3	2.8	1.2	.90	1.6	.95	2.1	25	2.8	9.3	.37	1.7
9	1.9	2.8	1.3	.90	1.6	.95	2.0	20	2.2	7.0	.74	1.0
10	1.4	2.8	1.2	1.0	1.5	.95	2.0	15	3.1	5.2	.41	.80
11	1.5	2.9	1.1	1.7	1.5	.95	2.6	15	3.4	4.3	.33	.88
12	1.5	2.4	1.0	3.0	1.4	.95	3.7	13	34	4.9	.25	.92
13	1.5	2.2	1.0	4.1	1.4	.95	4.8	10	54	3.2	.33	.74
14	1.7	2.4	1.0	4.2	1.3	.95	6.0	14	50	3.0	.21	.48
15	1.9	2.2	1.0	4.1	1.3	.95	9.3	16	51	2.8	.18	.56
16	1.9	2.0	1.0	3.9	1.2	1.0	12	14	37	2.5	.12	.25
17	1.5	1.9	1.0	3.7	1.2	1.0	14	12	26	2.8	.06	.21
18	1.6	1.8	1.0	3.5	1.2	1.0	21	11	20	2.1	.04	1.0
19	1.3	1.6	.95	3.3	1.1	1.1	23	10	13	1.8	.09	1.8
20	1.1	1.7	.95	3.1	1.1	1.2	26	11	13	1.5	.04	1.7
21	1.0	1.8	.95	3.0	1.1	1.4	29	8.9	11	1.2	.15	1.6
22	1.3	1.5	.95	2.9	1.1	3.3	35	8.5	10	1.3	.12	1.2
23	2.4	1.4	.95	2.8	1.0	4.1	52	7.0	7.4	1.2	.86	2.9
24	.82	1.4	.95	2.7	1.0	4.0	64	5.5	6.3	2.2	1.5	1.8
25	.66	1.3	.95	2.6	1.0	3.8	72	4.6	7.0	1.5	.86	1.6
26	.90	1.3	.95	2.5	1.0	3.5	76	3.7	4.4	2.0	.56	1.0
27	.90	1.4	.90	2.4	.98	3.3	75	3.2	3.4	1.2	.41	.88
28	2.0	1.3	.90	2.3	.95	3.1	78	3.4	3.2	1.0	.82	.80
29	2.9	1.3	.90	2.2	---	2.9	64	2.9	5.0	.98	.86	.62
30	2.8	1.4	.90	2.2	---	2.8	65	3.0	4.0	.92	.29	1.0
31	2.4	---	.90	2.1	---	2.8	---	3.0	---	.96	.62	---
TOTAL	46.14	98.4	33.10	71.40	38.55	54.55	754.8	548.7	391.8	118.46	14.95	33.42
MEAN	1.49	3.28	1.07	2.30	1.38	1.76	25.2	17.7	13.1	3.82	.48	1.11
MAX	2.9	15	1.5	4.2	2.0	4.1	78	62	54	12	1.5	3.1
MIN	.56	1.3	.90	.90	.95	.95	2.0	2.9	1.4	.92	.04	.09
CFSM	.17	.37	.12	.26	.16	.20	2.85	2.00	1.48	.43	.05	.13
IN.	.19	.41	.14	.30	.16	.23	3.18	2.31	1.65	.50	.06	.14

CAL YR 1974 TOTAL 2603.54 MEAN 7.13 MAX 77 MIN .04 CFSM .81 IN 10.96
WTR YR 1975 TOTAL 2204.27 MEAN 6.04 MAX 78 MIN .04 CFSM .68 IN 9.28

05127219 Shagawa Lake tributary at Ely, Minn.

LOCATION.--Lat 47°54'24", long 91°52'23", in NE¼SW¼ sec.28, T.63 N., R.12 W., St. Louis County, on left bank, 200 ft (61 m) upstream from mouth, 500 ft (152 m) northwest of sewage plant in Ely.

DRAINAGE AREA.--0.71 mi² (1.84 km²).

PERIOD OF RECORD.--April 1971 to current year.

GAGE.--Water-stage recorder and V-notch sharp crested weir. Datum of gage is 1,348.29 ft (410.959 m) above mean sea level, datum of 1929. Prior to June 8, 1971, nonrecording gage at site 75 ft (23 m) downstream at different datum.

EXTREMES.--Current year: Maximum discharge, 17 ft³/s (0.48 m³/s) Apr. 13 (gage height, 2.83 ft or 0.863 m); no flow on many days.
Period of record: Maximum discharge, 54 ft³/s (1.53 m³/s) Sept. 1, 1973 (gage height, 3.16 ft or 0.963 m); no flow at times each year.

REMARKS.--Records fair. On Mar. 20, 1972, storm sewer carrying runoff from business and residential areas in basin was diverted 1,700 ft (518 m) upstream from gage to open mine pit.

COOPERATION.--Prior to June 8, 1971, gage readings furnished by Water Quality Office, Environmental Protection Agency.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1							0	.01	0	0		
2							0	0	0	0		
3							0	0	0	0		
4							0	0	0	0		
5							0	0	0	.22		
6							0	0	0	.18		
7							0	0	0	.09		
8							0	0	0	.06		
9							0	0	0	0		
10							0	0	0	0		
11							0	0	0	0		
12							.14	0	.78	0		
13							2.6	0	.03	0		
14							1.6	0	0	0		
15							1.3	0	0	0		
16							1.2	0	0	0		
17							1.1	0	0	0		
18							1.2	0	0	0		
19							.82	0	0	0		
20							.25	0	0	0		
21							.29	0	0	0		
22							.49	0	0	0		
23							1.1	0	0	0		
24							.52	0	0	0		
25							.39	0	0	0		
26							.23	0	0	0		
27							.27	0	0	0		
28							.14	0	0	0		
29					---		0	0	0	0		
30					---		.01	0	0	0		
31		---			---		---	0	---	0		---
TOTAL	0	0	0	0	0	0	13.65	.01	.81	.55	0	0
MEAN	0	0	0	0	0	0	.46	.0003	.027	.018	0	0
MAX	0	0	0	0	0	0	2.6	.01	.78	.22	0	0
MIN	0	0	0	0	0	0	0	0	0	0	0	0
CFSM	0	0	0	0	0	0	.65	.0006	.04	.03	0	0
IN.	0	0	0	0	0	0	.71	.0005	.04	.03	0	0

CAL YR 1974 TOTAL 14.69 MEAN .040 MAX 1.1 MIN 0 CFSM .06 IN .77
WTR YR 1975 TOTAL 15.02 MEAN .041 MAX 2.6 MIN 0 CFSM .06 IN .79

05127220 Burgo Creek near Ely, Minn.

LOCATION.--Lat 47°55'32", long 91°51'40", in SW¼NW¼ sec.22, T.63 N., R.12 W., St. Louis County, near right bank 10 ft (3 m) upstream from culvert on County Road 88, 0.5 mi (0.8 km) upstream from mouth and 1.5 mi (2.4 km) north of Ely.

DRAINAGE AREA.--3.04 mi² (7.87 km²).

PERIOD OF RECORD.--May 1967 to current year.

GAGE.--Nonrecording gage and crest-stage gage. Datum of gage is 1,328.49 ft (404.924 m) above mean sea level, datum of 1929. Prior to Nov. 18, 1972, nonrecording gage and crest-stage gage at same site at different datum. Nov. 18, 1972, to July 12, 1973, reference point on downstream side of culvert at present datum, and July 13, 1973, to Sept. 26, 1973, nonrecording gage at site 125 ft (38 m) upstream at present datum.

AVERAGE DISCHARGE.--8 years, 3.56 ft³/s (0.101 m³/s), 15.90 in/yr (404 mm/yr).

EXTREMES.--Current year: Maximum discharge, 44 ft³/s (1.25 m³/s) Apr. 23 (gage height, 11.25 ft or 3.429 m); no flow on many days.

Period of record: Maximum discharge, 732 ft³/s (20.7 m³/s) June 10, 1970 (gage height, 12.14 ft or 3.700 m, from floodmark, datum then in use), from rating curve extended above 150 ft³/s (4.25 m³/s) on basis of flow through culvert and flow-over-road measurement of peak flow; no flow at times in most years.

REMARKS.--Records fair except those below 0.5 ft³/s (0.01 m³/s), which are poor.

COOPERATION.--Gage readings furnished by Water Quality Office, Environmental Protection Agency.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.80	4.3	1.5	.49	.20	.08	.85	17	.18	.21	.08	0
2	.81	15	1.4	.50	.19	.08	.85	15	.18	1.4	.06	0
3	.80	12	1.3	.47	.18	.08	.85	13	.16	.90	.04	.04
4	.75	9.9	1.1	.47	.17	.08	.84	12	.16	.40	.05	.01
5	2.1	8.0	1.0	.48	.16	.08	.83	9.9	.39	.73	.05	0
6	1.4	6.6	.90	.45	.16	.08	.80	9.1	.48	1.1	.06	.24
7	1.8	5.6	.84	.44	.15	.08	.76	8.2	.36	.80	.04	.27
8	1.8	5.0	.82	.44	.14	.08	.74	7.2	.21	.60	.02	.18
9	1.8	4.6	.79	.43	.14	.08	.73	6.5	.18	.50	.04	.14
10	1.7	4.3	.77	.45	.13	.08	.73	5.8	.18	.36	.03	.16
11	1.5	4.1	.75	.53	.13	.08	.77	4.3	.90	.30	.01	.14
12	1.5	3.9	.73	.61	.12	.08	.81	3.8	5.0	.10	0	.12
13	1.7	3.8	.71	.71	.12	.08	.93	3.5	13	.16	.02	.12
14	2.8	3.4	.70	.74	.11	.08	1.3	3.7	11	.10	.03	.10
15	2.4	3.4	.68	.79	.11	.08	2.1	3.8	5.6	.12	.02	.08
16	2.4	3.2	.66	.76	.11	.08	5.8	3.5	4.1	.14	.02	.05
17	2.3	2.9	.65	.70	.10	.09	17	3.0	2.9	.14	.02	.03
18	2.3	2.7	.64	.60	.10	.10	30	2.7	2.3	.14	.03	.03
19	2.2	2.6	.63	.51	.10	.15	35	2.6	1.8	.14	0	.30
20	2.2	2.7	.62	.45	.09	.32	25	2.4	1.9	.05	.02	.30
21	2.2	2.7	.61	.38	.09	.46	22	2.0	2.0	.06	.03	.33
22	1.9	2.3	.60	.35	.09	.62	22	1.8	1.6	.03	0	.30
23	1.8	2.2	.59	.33	.08	.66	34	1.4	1.4	.04	.14	.42
24	1.7	2.2	.58	.30	.08	.75	36	1.0	1.1	.04	.05	.33
25	1.5	2.2	.57	.29	.08	.79	32	.83	.90	.02	.02	.42
26	1.5	2.1	.56	.27	.08	.81	28	.50	.62	.02	.01	.18
27	1.5	2.1	.54	.26	.08	.83	23	.35	.50	0	0	.16
28	1.7	2.0	.53	.24	.08	.84	25	.30	.42	.04	0	.27
29	2.0	1.9	.52	.23	---	.84	19	.24	.39	.04	0	.21
30	2.7	1.7	.51	.22	---	.85	18	.21	.36	.06	0	.27
31	2.7	---	.50	.21	---	.85	---	.24	---	.06	0	---
TOTAL	55.95	129.4	23.30	14.10	3.37	10.24	385.70	145.85	60.33	9.26	.89	5.20
MEAN	1.80	4.31	.75	.45	.12	.33	12.9	4.70	2.01	.30	.029	.17
MAX	2.7	15	1.5	.79	.20	.85	36	17	13	1.4	.14	.42
MIN	.75	1.7	.50	.21	.08	.08	.73	.21	.16	0	0	0
CFSM	.59	1.42	.25	.15	.04	.11	4.24	1.55	.66	.10	.010	.06
IN.	.68	1.58	.29	.17	.04	.13	4.72	1.78	.74	.11	.01	.06

CAL YR 1974 TOTAL 1050.28 MEAN 2.88 MAX 49 MIN 0 CFSM .95 IN 12.85
WTR YR 1975 TOTAL 843.59 MEAN 2.31 MAX 36 MIN 0 CFSM .76 IN 10.32

05127225 Shagawa Lake at Ely, Minn.

LOCATION.--Lat 47°54'18", long 91°53'00", in NE¼NE¼ sec.33, T.63 N., R.12 W., St. Louis County, on south shore of Shagawa Lake, on east pier of dock at U.S. Forest Service Seaplane Base in Ely.

PERIOD OF RECORD.--April 1967 to current year. April 1962 to July 1966 (fragmentary) in files of Minnesota Department of Natural Resources, Division of Waters.

GAGE.--Nonrecording gage read once daily. Datum of gage is 1,330.00 ft (405.384 m) above mean sea level, datum of 1929 (levels by Minnesota Department of Conservation). Gage readings have been reduced to elevations above mean sea level.

EXTREMES.--Current year: Maximum elevation observed, 1,339.37 ft (408.240 m) May 5; minimum observed, 1,337.23 ft (407.588 m) Sept. 16, 17.

Period of record: Maximum elevation observed, 1,340.22 ft (408.499 m) June 13, 1970; minimum observed, 1,336.91 ft (407.490 m) Feb. 26, 1968.

Maximum elevation observed April 1962 to July 1966, 1,339.95 ft (408.417 m) Apr. 27, 28, 1966, from Minnesota Department of Natural Resources, Division of Waters.

COOPERATION.--Gage readings furnished by Water Quality Office, Environmental Protection Agency and U.S. Forest Service.

MONTHEND ELEVATIONS, IN FEET, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

Oct. 31	1,337.57	Feb. 28	1,337.59	June 30	1,338.31
Nov. 29	1,337.71	Mar. 31	1,337.52	July 31	1,337.73
Dec. 31	1,337.58	Apr. 30	1,339.22	Aug. 29	1,337.33
Jan. 31	1,337.69	May 30	1,338.45	Sept.30	1,337.32

NOTE.--Elevations other than those shown are available.

05127230 Shagawa River at Ely, Minn.

LOCATION.--Lat 47°55'09", long 91°50'08", in SW¼SW¼ sec.23, T.63 N., R.12 W., St. Louis County, on right bank, 300 ft (91 m) downstream from outlet of Shagawa Lake, 150 ft (46 m) north of the village limits of Ely, 0.8 mi (1.3 km) upstream from County Road 88 and 3 mi (5 km) upstream from Fall Lake.

PERIOD OF RECORD.--May 1967 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,335 ft (407 m), from topographic map). Prior to Aug. 2, 1967, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--8 years, 97.3 ft^3/s (2.756 m^3/s).

EXTREMES.--Current year: Maximum discharge, 364 ft^3/s (10.3 m^3/s) May 5, 6 (gage height, 6.13 ft or 1,868m); minimum daily, 16 ft^3/s (0.45 m^3/s) Sept. 17.

Period of record: Maximum discharge, 640 ft^3/s (18.1 m^3/s) June 12, 1970 (gage height, 6.89 ft or 2.100 m); minimum, 6.2 ft^3/s (0.18 m^3/s) Mar. 4, 1968 (gage height, 3.74 ft or 1.140 m).

REMARKS.--Records good.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	50	60	45	58	47	45	314	136	130	57	19
2	38	63	59	44	58	46	44	323	131	140	55	16
3	37	68	56	46	58	46	44	330	129	136	51	20
4	36	68	54	46	56	44	44	330	117	132	49	21
5	41	69	53	46	56	44	43	329	120	132	43	18
6	40	72	52	46	56	44	42	324	117	140	42	19
7	41	73	52	48	55	44	41	312	119	140	38	20
8	42	73	51	46	55	44	40	312	115	138	35	21
9	42	74	50	47	54	42	40	302	109	129	36	21
10	43	73	50	48	53	42	40	291	106	122	35	21
11	43	74	49	50	53	42	42	280	105	115	31	20
12	43	76	48	52	53	42	42	269	129	111	31	20
13	43	74	47	54	51	40	43	260	158	106	32	19
14	45	74	47	54	51	40	43	250	171	103	29	18
15	47	74	47	55	51	40	47	254	177	101	28	17
16	47	71	49	55	49	38	52	247	182	97	28	17
17	46	70	49	54	49	38	58	243	182	93	26	16
18	45	68	48	53	49	38	68	236	180	88	24	21
19	45	66	47	52	49	39	76	228	178	88	22	20
20	44	68	48	52	49	40	85	220	177	83	21	21
21	45	66	48	55	48	40	92	211	175	80	23	22
22	44	64	49	55	48	41	103	200	176	78	21	23
23	43	64	49	54	48	40	126	193	168	75	23	23
24	43	63	49	55	48	43	157	191	161	77	24	23
25	41	62	49	61	49	44	182	184	155	74	28	22
26	41	63	48	61	51	43	212	174	148	74	26	22
27	41	63	48	60	48	44	240	163	145	71	24	21
28	40	63	48	59	48	45	261	158	137	66	22	21
29	43	63	47	59	---	46	282	153	136	65	22	21
30	45	61	47	60	---	45	302	148	133	62	21	23
31	46	---	47	60	---	45	---	141	---	59	20	---
TOTAL	1319	2030	1545	1632	1451	1316	2936	7570	4373	3105	967	606
MEAN	42.5	67.7	49.8	52.6	51.8	42.5	97.9	244	146	100	31.2	20.3
MAX	47	76	60	61	58	47	302	330	182	140	57	23
MIN	36	50	47	44	48	38	40	141	105	59	20	16

CAL YR 1974 TOTAL 33202 MEAN 91.0 MAX 327 MIN 28
WTR YR 1975 TOTAL 28852 MEAN 79.0 MAX 330 MIN 16

05127500 Basswood River near Winton, Minn.

(International gaging station)

LOCATION.--Lat 48°04'55", long 91°39'10", in sec.30, T.65 N., R.10 W., Lake County, on island in Jackfish Bay of Basswood Lake, used to determine discharge at outlet (lat 48°06', long 91°39', in sec.19, T.65 N., R.10 W., on international boundary 14 mi (23 km) northeast of Winton).

DRAINAGE AREA.--1,740 mi^2 (4,507 km^2), approximately (above outlet of Basswood Lake).

PERIOD OF RECORD.--March to June 1924, September 1925 to March 1928, January 1930 to current year. Monthly discharge only for some periods, published in WSP 1308.

GAGE.--Water-stage recorder. Datum of gage is 1,296.80 ft (395.265 m) above mean sea level, adjustment of 1928, by Geodetic Survey of Canada. Prior to Oct. 27, 1938, nonrecording gages at several sites in vicinity of gage, at datum 3.0 ft (0.914 m) higher. Oct. 28, 1938, to Sept. 30, 1966, water-stage recorder at datum 3.0 ft (0.914 m) higher.

AVERAGE DISCHARGE.--47 years (1925-27, 1930-75), 1,394 ft^3/s (39.48 m^3/s), 10.88 in/yr (276 mm/yr).

EXTREMES.--Current year: Maximum discharge, 5,520 ft^3/s (156 m^3/s) May 14 (gage height, 6.14 ft or 1.871 m); minimum, 386 ft^3/s (10.9 m^3/s) Sept. 17 (gage height, 2.70 ft or 0.823 m).

Period of record: Maximum discharge, 15,600 ft^3/s (442 m^3/s) May 24, 1950 (gage height, 9.94 ft or 3.030 m, present datum); minimum, 73 ft^3/s (2.07 m^3/s) Dec. 5, 1948.

REMARKS.--Records good. Some regulation by powerplant on Kawishiwi River at Winton, Minn., and by many lakes located upstream from station.

COOPERATION.--This station is one of the international gaging stations maintained by the United States under agreement with Canada.

REVISIONS (WATER YEARS).--WSP 955: Drainage area. WSP 1145: 1935, 1937.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	755	795	1060	828	1010	904	685	2590	3080	2210	1020	473
2	747	824	1050	825	1010	885	683	2900	2920	2280	970	466
3	735	841	1050	834	1010	868	680	3230	2750	2240	950	453
4	724	865	1050	836	1000	853	677	3570	2650	2210	930	442
5	752	885	1040	830	1000	843	671	3880	2550	2160	890	435
6	763	908	1030	840	1000	825	665	4180	2460	2150	840	433
7	766	934	1020	846	999	807	660	4450	2380	2100	790	477
8	762	955	1010	842	1000	795	657	4700	2320	2030	751	486
9	754	970	999	839	1000	781	650	4940	2240	1930	702	476
10	754	987	983	855	1000	769	646	5120	2160	1860	672	471
11	737	1010	973	912	1000	757	642	5280	2120	1840	650	449
12	729	1030	961	925	1000	751	640	5400	2200	1790	628	437
13	721	1040	954	915	1000	744	656	5480	2260	1750	622	435
14	737	1040	949	906	1000	734	656	5500	2320	1700	608	428
15	751	1050	949	898	1000	723	665	5500	2430	1680	588	416
16	749	1060	942	890	1000	712	694	5440	2540	1630	556	411
17	742	1070	926	889	1000	700	732	5360	2630	1590	526	398
18	740	1070	916	886	1000	691	810	5240	2700	1540	508	405
19	736	1080	908	887	1000	683	880	5120	2750	1500	491	414
20	732	1080	909	897	1000	685	940	5020	2850	1480	490	409
21	727	1080	908	916	991	681	1010	4860	2890	1420	525	412
22	710	1080	905	931	973	673	1060	4660	2940	1390	512	400
23	707	1070	925	930	969	671	1170	4470	2940	1380	515	417
24	690	1070	921	941	966	691	1280	4300	2920	1350	522	420
25	684	1060	917	1010	958	700	1390	4110	2840	1340	513	423
26	681	1070	906	1030	964	697	1520	3900	2720	1300	512	424
27	681	1070	890	1020	949	692	1680	3770	2600	1240	504	424
28	679	1060	884	1020	925	692	1820	3660	2490	1200	512	424
29	703	1070	870	1020	---	689	2020	3540	2360	1150	512	421
30	713	1060	861	1020	---	690	2280	3410	2270	1120	503	415
31	719	---	843	1020	---	687	---	3250	---	1050	490	---
TOTAL	22580	30184	29509	28238	27724	23073	29219	136830	77280	51570	19764	13002
MEAN	728	1006	952	911	990	744	974	4414	2576	1664	638	433
MAX	766	1080	1060	1030	1010	904	2280	5500	3080	2280	1020	486
MIN	679	795	843	825	925	671	640	2590	2120	1050	490	398
CFSM	.42	.58	.55	.52	.57	.43	.56	2.54	1.48	.96	.37	.25
IN.	.48	.65	.63	.60	.59	.49	.62	2.93	1.65	1.10	.42	.28

CAL YR 1974 TOTAL 594945 MEAN 1630 MAX 6150 MIN 535 CFSM .94 IN 12.72
WTR YR 1975 TOTAL 488998 MEAN 1340 MAX 5500 MIN 398 CFSM .77 IN 10.45

05128000 Namakan River at outlet of Lac la Croix, Ontario

(International gaging station)

LOCATION.--Lat 48°23'00", long 92°10'40", at Campbell's Camp, 2.5 mi (4.0 km) west of outlet of Lac la Croix.

DRAINAGE AREA.--5,170 mi² (13,390 km²).

PERIOD OF RECORD.--September 1921 to January 1922, April 1922 to current year, in reports of Geological Survey. Monthly discharge only for some periods, published in WSP 1308. August 1921 to current year, in reports of Water Survey of Canada.

GAGE.--Water-stage recorder. Gage readings have been reduced to elevations above mean sea level, United States and Canada Boundary Survey datum. Prior to October 1933, nonrecording gages at various sites on Lac la Croix. October 1933 to Mar. 13, 1963, nonrecording gage at present site and datum.

AVERAGE DISCHARGE.--53 years (1922-75), 3,814 ft³/s (108.0 m³/s), 10.02 in/yr (255 mm/yr).

EXTREMES.--Current year: Maximum discharge, 11,100 ft³/s (314 m³/s) May 23 (elevation, 1,187.69 ft or 362.008 m); maximum daily, 11,000 ft³/s (312 m³/s) May 22, 23; minimum, 1,760 ft³/s (49.8 m³/s) Sept. 30 (elevation, 1,182.95 ft or 360.563 m); minimum daily elevation, 1,182.98 ft (360.572 m) Sept. 30.

Period of record: Maximum discharge, 28,200 ft³/s (799 m³/s) May 31 to June 2, 1950 (elevation, 1,193.30 ft or 363.718 m); minimum, 535 ft³/s (15.2 m³/s) at times in February, March and April 1924 (elevation, 1,181.50 ft or 360.121 m).

REMARKS.--Records excellent.

COOPERATION.--This station is one of the international gaging stations maintained by Canada under agreement with the United States.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4170	3600	3800	3110	2980	2670	2260	5420	9400	7310	4230	2340
2	4130	3620	3780	3090	2970	2660	2240	5820	9220	7420	4180	2340
3	4080	3630	3760	3090	2960	2640	2220	6230	8910	7390	4130	2240
4	4060	3670	3740	3080	2950	2630	2210	6610	8770	7310	4040	2220
5	4060	3680	3720	3060	2940	2630	2190	6990	8640	7240	3960	2180
6	4060	3700	3690	3050	2920	2600	2170	7370	8460	7220	3850	2160
7	4060	3710	3670	3040	2910	2580	2160	7720	8320	7110	3760	2240
8	4040	3730	3650	3010	2890	2560	2140	8020	8140	6940	3600	2230
9	4020	3720	3620	2990	2880	2540	2120	8340	7950	6800	3540	2210
10	4030	3740	3590	3010	2870	2520	2110	8620	7740	6690	3430	2180
11	3960	3720	3570	3090	2860	2500	2100	8870	7550	6580	3390	2100
12	3940	3720	3540	3080	2860	2500	2090	9120	7610	6460	3300	2070
13	3910	3720	3510	3070	2840	2480	2080	9360	7590	6350	3200	2060
14	3900	3740	3480	3060	2840	2460	2080	9650	7480	6170	3160	2030
15	3920	3740	3470	3050	2830	2440	2090	9920	7420	6020	3160	2000
16	3890	3780	3450	3030	2820	2420	2110	10200	7330	5910	3090	1990
17	3880	3760	3440	3020	2800	2390	2170	10400	7310	5750	3010	1960
18	3860	3790	3390	3010	2790	2370	2290	10600	7320	5590	2950	1970
19	3880	3810	3330	2990	2770	2360	2360	10800	7310	5430	2900	1970
20	3850	3780	3300	2970	2760	2360	2460	10900	7440	5290	2860	1950
21	3740	3820	3300	2980	2740	2350	2540	10900	7450	5180	2800	1950
22	3730	3820	3280	2970	2730	2340	2640	11000	7440	5060	2770	1940
23	3710	3820	3280	2970	2720	2320	2850	11000	7400	5010	2740	1950
24	3660	3810	3270	2970	2710	2330	3080	10900	7450	4860	2700	1930
25	3630	3810	3270	3020	2710	2360	3310	10800	7570	4830	2600	1920
26	3630	3810	3270	3030	2720	2340	3590	10600	7570	4710	2550	1900
27	3590	3820	3250	3020	2720	2330	3900	10400	7530	4620	2530	1880
28	3560	3820	3220	3020	2690	2320	4250	10300	7510	4590	2530	1870
29	3530	3830	3190	3020	---	2310	4610	10100	7420	4480	2500	1850
30	3520	3820	3160	3000	---	2300	5010	9810	7340	4400	2450	1800
31	3490	---	3140	2990	---	2270	---	9630	---	4290	2410	---
TOTAL	119490	112540	107130	93890	79180	75880	79430	286400	234590	183010	98320	61430
MEAN	3855	3751	3456	3029	2828	2448	2648	9239	7820	5904	3172	2048
MAX	4170	3830	3800	3110	2980	2670	5010	11000	9400	7420	4230	2340
MIN	3490	3600	3140	2970	2690	2270	2080	5420	7310	4290	2410	1800
CFSM	.75	.73	.67	.59	.55	.47	.51	1.79	1.51	1.14	.61	.40
IN.	.86	.81	.77	.68	.57	.55	.57	2.06	1.69	1.32	.71	.44

CAL YR 1974 TOTAL 1879390 MEAN 5149 MAX 13500 MIN 1910 CFSM 1.00 IN. 13.52
WTR YR 1975 TOTAL 1531290 MEAN 4195 MAX 11000 MIN 1800 CFSM .81 IN. 11.02

05128200 Vermilion Lake near Soudan, Minn.

LOCATION.--Lat 47°49'52", long 92°16'20", in SW¼SE¼ sec.20, T.62 N., R.15 W., St. Louis County, on south shore of Vermilion Lake, at McKinley Park, 2 mi (3.2 km) northwest of Soudan.

PERIOD OF RECORD.--October 1913 to July 1915, July 1941 to November 1942, June 1946 to current year (fragmentary during 1947).

GAGE.--Water-stage recorder. Datum of gage is 1,355.10 ft (413.03 m) above mean sea level, datum of 1929. October 1913 to July 1915, nonrecording gage at Tower, 2 mi (3.2 km) southwest of present gage, at datum about 1,354.60 ft (412.88 m). July 1941 to November 1942, and June 1946 to June 1951, nonrecording gage approximately 13 mi (20.9 km) northwest at Vermilion Dam near Tower, at same datum. All gage readings have been reduced to elevations above mean sea level, datum of 1929.

EXTREMES.--Current year: Maximum elevation, 1,359.08 ft (414.248 m) May 10 (affected by wind action); maximum daily, 1,359.04 ft (414.235 m) May 9; minimum daily, 1,357.06 ft (413.637 m) Oct. 3, Sept. 17, 18.

Period of record: Maximum elevation observed, 1,359.52 ft (414.382 m) May 16, 1950; minimum observed, 1,356.02 ft (413.315 m) Jan. 29, 1942.

Elevation on June 6, 1913, was 1,359.94 ft (414.510 m), determined from reference point set by local observers.

MONTHEND ELEVATION, IN FEET, OCTOBER 1974 TO SEPTEMBER 1975

Oct. 31	1,357.16	Feb. 28	1,357.26	June 30	1,358.22
Nov. 30	1,357.31	Mar. 31	1,357.27	July 31	1,357.68
Dec. 31	1,357.25	Apr. 30	1,358.60	Aug. 31	1,357.20
Jan. 31	1,357.38	May 31	1,358.47	Sept.30	1,357.18

NOTE.--Elevations other than those shown above are available.

05129000 Vermilion River below Vermilion Lake, near Tower, Minn.

LOCATION.--Lat 47°57'41", long 92°28'33", in SE¼SW¼ sec.2, T.63 N., R.17 W., St. Louis County, on left bank 200 ft (61 m) downstream from dam at outlet of Vermilion Lake, 4.4 mi (7.1 km) upstream from Twomile Creek, and 14.2 mi (22.8 km) northwest of Tower.

DRAINAGE AREA.--483 mi² (1,251 km²).

PERIOD OF RECORD.--May 1911 to September 1917, June 1928 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,347.36 ft (410.675 m) above mean sea level, datum of 1929. June 26, 1928, to July 8, 1931, nonrecording gage at same site, at datum 3.05 ft (0.930 m) higher. May 17, 1911, to Sept. 30, 1917, July 9, 1931, to Apr. 11, 1939, nonrecording gages, and Apr. 12, 1939, to Sept. 30, 1967, water-stage recorder at same site, at datum 3.00 ft (0.914 m) higher.

AVERAGE DISCHARGE.--53 years, 321 ft³/s (9.091 m³/s), 9.03 in/yr (229 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,600 ft³/s (45.3 m³/s) May 7 (gage height, 6.60 ft or 2.012 m); minimum, 91 ft³/s (2.58 m³/s) Oct. 4 (gage height, 3.52 ft or 1.073 m).
Period of record: Maximum discharge, 2,710 ft³/s (76.7 m³/s) May 23, 1950 (gage height, 7.68 ft or 2.341 m, present datum); no flow Oct. 25-29, 1955, caused by temporary storage behind new concrete dam at outlet of Vermilion Lake.

REMARKS.--Records good.

REVISIONS (WATER YEARS).--WSP 1508: 1913.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	109	177	228	180	233	191	207	1250	963	786	428	160
2	118	199	226	180	231	188	204	1320	941	852	405	173
3	121	198	222	180	229	187	201	1390	899	843	394	152
4	108	203	220	180	212	186	197	1460	901	843	356	144
5	120	215	218	180	210	185	195	1500	882	843	345	139
6	128	226	216	180	210	183	192	1530	842	844	341	143
7	140	239	213	181	210	182	189	1560	840	852	329	159
8	130	245	210	180	209	181	184	1580	829	852	295	159
9	138	250	211	182	208	178	180	1560	816	826	275	164
10	141	254	206	194	207	176	179	1550	803	818	261	155
11	128	258	203	233	206	176	179	1530	771	794	261	130
12	129	259	196	236	205	176	176	1520	805	795	256	127
13	144	260	195	231	204	178	177	1500	835	786	234	129
14	120	259	195	231	203	176	179	1480	858	753	235	134
15	139	258	197	230	202	175	184	1500	855	748	230	123
16	134	257	199	228	201	171	191	1500	865	750	220	123
17	126	255	198	228	200	170	208	1470	849	722	201	126
18	134	253	198	224	200	167	243	1430	852	685	196	136
19	132	252	197	220	200	166	265	1410	852	640	189	141
20	139	250	194	223	195	170	287	1390	871	610	196	122
21	146	249	193	221	196	171	315	1350	854	612	185	127
22	123	247	193	223	196	168	348	1310	859	579	190	127
23	128	245	192	220	195	166	414	1320	822	570	203	147
24	118	242	190	223	194	182	481	1280	820	532	222	151
25	119	238	189	241	195	198	550	1240	877	530	209	154
26	120	237	188	245	196	197	618	1140	869	512	190	149
27	123	235	187	243	195	205	789	1120	830	478	190	146
28	125	231	186	240	192	211	883	1110	819	477	192	145
29	145	230	184	239	---	210	997	1080	815	462	188	145
30	149	224	182	239	---	208	1120	1000	803	445	179	130
31	147	---	180	236	---	209	---	981	---	431	178	---
TOTAL	4019	7148	6204	6671	5734	5685	10528	42301	25444	21258	7773	4258
MEAN	130	238	200	215	205	183	351	1365	848	686	251	142
MAX	149	260	228	245	233	211	1120	1580	963	852	428	173
MIN	108	177	180	180	192	166	176	981	771	431	178	122
CFSM	.27	.49	.41	.45	.42	.38	.73	2.83	1.76	1.42	.52	.29
IN.	.31	.55	.48	.51	.44	.44	.81	3.26	1.96	1.64	.60	.33

CAL YR 1974 TOTAL 142078 MEAN 389 MAX 1480 MIN 105 CFSM .81 IN 10.94
WTR YR 1975 TOTAL 147023 MEAN 403 MAX 1580 MIN 108 CFSM .83 IN 11.32

05129400 Rainy Lake near Fort Frances, Ontario

(International gaging station)

LOCATION.--Lat 48°38'30", long 93°20'00", at Five Mile dock, approximately 5 mi (8 km) northeast of town of Fort Frances.

PERIOD OF RECORD.--January 1910 to September 1917 and October 1934 to current year, in reports of Geological Survey. August 1911 to September 1975, in reports of Water Survey of Canada, Inland Waters Branch. Prior to October 1949, published as "at Ranier, Minn.", and as "at Fort Frances, Ontario" October 1949 to September 1964.

GAGE.--Water-stage recorder. Datum of gage is at mean sea level (United States and Canadian Boundary Survey). January 1910 to December 1949, nonrecording gage 3 mi (5 km) northeast at Ranier, Minn., at same datum. January 1950 to October 1964, water-stage recorder on Government dock at Pither's Point at Fort Frances and supplementary gage in town pumping station, 0.5 mi (0.8 km) south, used during winter months, at same datum.

EXTREMES.--Maximum elevation, 1,108.15 ft (337.764 m) July 5; maximum daily, 1,107.98 ft (337.712 m) Nov. 1; minimum, 1,104.51 ft (336.655 m) Apr. 12; minimum daily, 1,104.53 ft (336.661 m) Apr. 12, 13 and 15.

Period of record: Maximum elevation observed, 1,112.97 ft (339.233 m) July 5, 1950; minimum observed, 1,101.26 ft (335.664 m) Apr. 17, 1923, Apr. 2, 1930.

COOPERATION.--This station is one of the international gaging stations maintained by Canada under agreement with the United States.

MONTHEND ELEVATION, IN FEET, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

Oct. 31	7.89	Feb. 28	5.43	June 30	7.90
Nov. 30	7.31	Mar. 31	4.85	July 31	7.43
Dec. 31	6.72	Apr. 30	6.08	Aug. 31	7.28
Jan. 31	6.14	May 31	7.24	Sept.30	7.31

NOTE.--Add 1,100 ft to obtain elevation above mean sea level. Elevations other than those shown are available.

05130500 Sturgeon River near Chisholm, Minn.

LOCATION.--Lat 47°40'25", long 92°54'00", in NE¼NW¼ sec.20, T.60 N., R.20 W., St. Louis County, on left bank 1,000 ft (305 m) upstream from highway bridge, 0.6 mi (1.0 km) downstream from East Branch Sturgeon River, and 11.5 mi (18.5 km) north of Chisholm.

DRAINAGE AREA.--187 mi² (484 km²).

PERIOD OF RECORD.--August 1942 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,306.7 ft (398.282 m) above mean sea level, datum of 1929. Prior to Aug. 24, 1944, nonrecording gage at site 1,000 ft (305 m) downstream at different datum.

AVERAGE DISCHARGE.--33 years, 127 ft³/s (3.597 m³/s), 9.22 in/yr (234 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,460 ft³/s (41.3 m³/s) Apr. 30 (gage height, 4.56 ft or 1,390 m); minimum daily, 27 ft³/s (0.76 m³/s) Mar. 9-15; minimum gage height, 0.68 ft (0.207 m) Aug. 19.

Period of record: Maximum discharge, 3,630 ft³/s (103 m³/s) May 7, 1950 (gage height, 6.41 ft or 1.954 m), from rating curve extended above 1,600 ft³/s (45.3 m³/s) on basis of slope-area measurement of peak flow; minimum daily, 6.0 ft³/s (0.17 m³/s) Feb. 18-27, 1944; minimum gage height, 0.08 ft (0.024 m) Jan. 28 to Feb. 1, 1963.

REMARKS.--Records good except those for winter periods, which are fair.

REVISIONS (WATER YEARS).--WSP 1438: 1946.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	114	59	39	29	28	41	1410	185	189	49	41
2	45	186	58	39	29	28	41	1300	176	297	49	40
3	42	210	57	38	28	28	41	1170	170	353	46	43
4	43	221	56	38	28	28	41	1060	162	383	47	42
5	60	214	54	37	28	28	42	976	153	387	45	43
6	66	197	54	36	28	28	42	906	167	363	42	47
7	71	177	53	36	28	28	43	840	182	326	40	54
8	71	160	41	35	28	28	45	763	169	302	38	54
9	72	148	40	34	28	27	49	660	154	276	37	54
10	71	136	46	33	28	27	53	604	148	257	36	52
11	69	127	45	32	28	27	60	558	145	233	34	50
12	68	122	45	32	28	27	72	480	210	204	34	49
13	65	115	45	31	28	27	96	442	273	176	33	48
14	68	101	45	30	28	27	135	419	314	156	32	48
15	68	97	45	30	28	27	147	424	332	136	33	45
16	69	96	47	30	28	28	295	417	319	124	33	44
17	68	92	44	30	28	28	371	389	284	114	32	43
18	67	89	44	30	28	29	500	369	259	105	31	47
19	66	89	44	29	28	30	667	352	233	97	31	53
20	66	91	43	29	28	31	743	337	219	90	33	59
21	64	83	43	29	28	32	834	377	204	83	37	75
22	61	86	42	29	28	35	884	374	189	77	36	77
23	60	85	41	29	28	38	1050	355	169	74	48	76
24	60	70	41	29	28	40	1250	320	154	69	48	73
25	59	70	41	29	28	41	1380	285	155	65	46	68
26	59	70	41	29	28	41	1410	260	145	63	47	65
27	59	69	40	29	28	41	1440	234	143	59	46	62
28	61	66	40	29	28	41	1450	231	130	56	45	59
29	71	68	42	29	---	41	1450	216	142	55	43	57
30	74	61	40	29	---	41	1460	206	168	51	42	58
31	76	---	39	29	---	41	---	195	---	48	40	---
TOTAL	1954	3511	1416	987	786	991	16252	16929	5903	5294	1235	1626
MEAN	63.0	117	45.7	31.8	28.1	32.0	541	546	197	171	39.8	54.2
MAX	76	221	59	39	29	41	1460	1410	332	387	49	77
MIN	42	61	39	29	28	27	41	195	130	48	31	40
CFSM	.34	.63	.24	.17	.15	.17	2.89	2.92	1.05	.91	.21	.29
IN.	.39	.70	.28	.20	.16	.20	3.23	3.37	1.17	1.05	.25	.32

CAL YR 1974 TOTAL 54630 MEAN 150 MAX 1210 MIN 18 CFSM .80 IN 10.87
WTR YR 1975 TOTAL 56884 MEAN 156 MAX 1460 MIN 27 CFSM .83 IN 11.31

PEAK DISCHARGE (BASE, 500 FT³/S).--Apr. 30 (0830) 1,460 ft³/s (4.56 ft).

05131000 Dark River near Chisholm, Minn.

LOCATION.--Lat 47°41'27", long 92°49'15", in SW¼SW¼ sec.12, T.60 N., R.20 W., St. Louis County, on right bank 50 ft (15 m) downstream from snowmobile bridge, 3.5 mi (5.6 km) upstream from mouth, and 12.2 mi (19.6 km) northeast of Chisholm.

DRAINAGE AREA.--50.6 mi^2 (131.1 km^2) of which 13.5 mi^2 (35.0 km^2), since October 1972, has been contained in tailing ponds and probably is noncontributing.

PERIOD OF RECORD.--August 1942 to September 1961, October 1965 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,316.8 ft (401.361 m) above mean sea level, datum of 1929 (surveyed by Topographic Division). Prior to Aug. 24, 1944, nonrecording gage at site 59 ft (15 m) upstream at same datum.

AVERAGE DISCHARGE.--29 years, 37.8 ft^3/s (1.070 m^3/s).

EXTREMES.--Current year: Maximum discharge, 255 ft^3/s (7.22 m^3/s) Apr. 25 (gage height, 3.77 ft or 1.149 m); minimum daily, 12 ft^3/s (0.34 m^3/s) Feb. 12-16; minimum gage height, 1.58 ft (0.482 m) Aug. 19.

Period of record: Maximum discharge, 1,170 ft^3/s (33.1 m^3/s) May 7, 1950 (gage height, 7.10 ft or 2.164 m); minimum, 0.3 ft^3/s (0.008 m^3/s) Aug. 3, 1956; minimum gage height, 0.87 ft (0.265 m) Mar. 22, 23, 1949, Aug. 16, 17, 1961.

REMARKS.--Records fair. Natural flow of stream affected by continually changing iron-mining activities that include diversions for iron-ore processing, and storage in tailing ponds.

COOPERATION.--Records for current water year computed by U.S. Steel Corporation and reviewed by Geological Survey.

REVISIONS (WATER YEARS).--WSP 1508: 1943(M), 1947-48(M), 1950.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	30	18	15	14	13	18	220	32	55	18	17
2	20	43	18	15	14	13	18	207	29	102	20	16
3	20	43	18	15	14	13	18	190	29	92	20	18
4	20	43	17	15	14	13	18	172	28	91	20	17
5	27	41	17	15	14	13	18	158	39	95	18	16
6	27	38	17	15	13	13	19	142	38	124	18	17
7	29	34	16	15	13	13	19	129	38	99	16	20
8	29	32	16	15	13	13	19	117	36	91	15	19
9	28	29	16	15	13	13	20	106	34	81	16	18
10	28	27	15	15	13	13	21	94	34	72	16	18
11	26	27	15	16	13	13	22	83	35	62	16	17
12	24	26	15	16	12	13	23	73	69	55	15	16
13	22	25	15	16	12	13	30	66	74	48	15	15
14	22	23	15	16	12	13	42	70	83	43	14	15
15	22	24	15	16	12	13	56	77	89	38	15	14
16	22	21	15	16	12	13	79	72	94	35	15	14
17	21	21	15	16	13	13	104	70	88	31	15	14
18	20	20	15	16	13	14	134	69	83	28	14	16
19	20	20	15	16	13	15	148	64	76	27	14	19
20	19	20	15	16	13	16	176	62	73	25	15	20
21	18	21	15	16	13	17	181	76	68	23	19	22
22	18	21	15	16	13	18	182	69	62	22	18	22
23	18	21	15	15	13	18	204	63	56	22	24	22
24	18	21	15	15	13	18	214	58	51	21	23	22
25	18	20	15	15	13	18	233	52	48	20	23	21
26	18	20	15	15	13	18	233	47	44	19	22	21
27	17	19	15	15	13	18	228	43	42	18	21	20
28	18	19	15	15	13	18	232	42	37	17	20	19
29	20	19	15	14	---	18	229	38	46	16	20	18
30	20	19	15	14	---	18	229	34	48	15	18	18
31	20	---	15	14	---	18	---	33	---	16	17	---
TOTAL	669	787	483	474	364	463	3167	2796	1603	1503	550	541
MEAN	21.6	26.2	15.6	15.3	13.0	14.9	106	90.3	53.4	48.5	17.7	18.0
MAX	29	43	18	16	14	18	233	220	94	124	24	22
MIN	17	19	15	14	12	13	18	33	28	15	14	14

CAL YR 1974 TOTAL 12217 MEAN 33.5 MAX 181 MIN 11
WTR YR 1975 TOTAL 13402 MEAN 36.7 MAX 233 MIN 12

05131500 Little Fork River at Littlefork, Minn.

LOCATION.--Lat 48°23'55", long 93°33'56", in NW¼ sec.9, T.68 N., R.25 W., Koochiching County, on left bank 100 ft (30 m) downstream from highway bridge at town of Littlefork, 0.3 mi (0.5 km) downstream from bridge on State Highway 217, 1.5 mi (2.4 km) upstream from Beaver Creek, and 18 mi (29 km) upstream from mouth.

DRAINAGE AREA.--1,730 mi² (4,481 km²), approximately.

PERIOD OF RECORD.--June to November 1909, April to November 1910, April 1911 to June 1917, September 1917, October 1917 to March 1919 (gage heights only), June 1928 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,073.06 ft (327.069 m) above mean sea level, datum of 1929. June 23, 1909, to Mar. 4, 1917, nonrecording gage at same site and datum. Mar. 5 to Sept. 30, 1917, and June 22, 1928, to July 20, 1937, nonrecording gage, at site 100 ft (30 m) upstream at same datum. Nonrecording gage 1.2 mi (1.9 km) upstream at datum 9.0 ft (2.7 m) higher (used as supplementary gage during periods of backwater from Rainy River.

AVERAGE DISCHARGE.--52 years (1911-16, 1928-75), 1,055 ft³/s (29.88 m³/s), 8.28 in/yr (210 mm/yr).

EXTREMES.--Current year: Maximum discharge, 17,300 ft³/s (490 m³/s) Apr. 30 (gage height, 30.33 ft or 9.245 m); minimum daily discharge, 190 ft³/s (5.38 m³/s) Mar. 15, 16; minimum gage height, 6.11 ft (1.862 m) Aug. 23.
Period of record: Maximum discharge, 25,000 ft³/s (708 m³/s) Apr. 18, 1916, May 11, 1950 (gage height, 37.00 ft or 11.278 m); minimum observed, 21 ft³/s (0.59 m³/s) Aug. 26, 27, 1936.

REMARKS.--Records good except those for winter periods, which are fair. Water-quality records for the current year are published in Section 2 of this report.
REVISIONS (WATER YEARS).--WSP 955: Drainage area. WSP 1508: 1913, 1916, 1928-32, 1934. WRD MINN 1974: 1963.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	276	700	460	245	205	195	270	16600	1420	2200	454	364
2	269	1120	440	245	205	195	270	15500	1330	3720	522	326
3	282	2480	430	245	205	195	270	14300	1250	5670	543	292
4	300	3010	420	240	200	195	275	13200	1180	5980	490	282
5	353	2880	410	240	200	195	275	12000	1260	5160	450	268
6	475	2570	400	235	200	195	280	10800	1840	4270	427	256
7	799	2220	390	232	200	194	280	9480	1970	5150	402	266
8	1130	1940	380	230	200	194	285	8260	2000	5060	374	270
9	1260	1720	370	230	200	193	290	7220	1800	4170	353	272
10	1230	1560	360	230	200	193	300	6320	1600	3440	326	292
11	1140	1440	360	225	200	192	310	5600	1430	3000	314	334
12	1040	1310	355	225	200	192	320	4960	1350	2580	304	348
13	924	1140	350	225	200	191	330	4400	1520	2150	294	332
14	845	1000	340	225	200	191	350	3950	1970	1840	283	311
15	800	850	335	220	200	190	400	3830	2410	1590	280	293
16	790	750	330	220	200	190	580	4120	2340	1390	277	272
17	787	860	325	220	200	195	900	4080	2140	1220	267	255
18	780	780	320	220	200	200	1500	3770	2150	1080	254	254
19	762	898	315	215	199	210	2500	3460	2020	960	245	259
20	721	900	305	215	199	215	3800	3170	1990	874	242	269
21	678	900	300	215	198	220	6200	2940	1950	806	240	287
22	641	900	295	215	198	230	8100	2850	1950	753	238	342
23	600	800	290	210	197	240	10200	2850	1820	701	241	460
24	567	700	285	210	197	245	13000	2740	1640	674	257	552
25	543	620	280	210	196	250	15000	2570	1450	625	265	558
26	516	560	275	210	196	255	15600	2360	1390	591	267	525
27	492	540	270	210	195	260	16000	2140	1670	565	303	484
28	475	520	265	210	195	260	16000	1930	1700	533	359	449
29	454	500	260	205	---	260	16500	1790	1820	503	364	415
30	452	480	255	205	---	265	17200	1640	2040	479	379	388
31	519	---	250	205	---	270	---	1540	---	454	363	---
TOTAL	20900	36448	10420	6887	5585	6665	147585	180350	52200	68100	10402	10275
MEAN	674	1215	336	222	199	215	4920	5818	1740	2200	336	343
MAX	1260	3010	460	245	205	270	17200	16600	2410	5980	543	558
MIN	269	480	250	205	195	190	270	1540	1180	454	238	254
CFSM	.39	.70	.19	.13	.12	.12	2.84	3.36	1.01	1.27	.19	.20
IN.	.45	.78	.22	.15	.12	.14	3.17	3.88	1.12	1.47	.22	.22

CAL YR 1974 TOTAL 529858 MEAN 1452 MAX 14300 MIN 118 CFSM .84 IN 11.39
WTR YR 1975 TOTAL 555905 MEAN 1523 MAX 17200 MIN 190 CFSM .88 IN 11.95

05132000 Big Fork River at Big Falls, Minn.

LOCATION.--Lat 48°11'45", long 93°48'25", in sec.35, T.155 N., R.25 W., Koochiching County, on left bank at village of Big Falls, 700 ft (213 m) downstream from falls, 0.3 mi (0.5 km) downstream from bridge on U.S. Highway 71, and 4.8 mi (7.7 km) upstream from Sturgeon River.

DRAINAGE AREA.--1,460 mi² (3,780 km²), approximately.

PERIOD OF RECORD.--August to November 1909, April to November 1910, April 1911 to September 1912 (gage heights and discharge measurements only), June 1928 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,144.71 ft (348.908 m) above mean sea level, datum of 1929. Prior to June 10, 1911, nonrecording gage at railroad bridge about 0.4 mi (0.6 km) upstream at different datum. June 10, 1911, to Sept. 30, 1912, and June 22, 1928, to Dec. 17, 1937, nonrecording gage at site 200 ft (61 m) upstream at same datum.

AVERAGE DISCHARGE.--47 years (1928-1975), 708 ft³/s (20.05 m³/s), 6.58 in/yr (167 mm/yr).

EXTREMES.--Current year: Maximum discharge, 9,350 ft³/s (265 m³/s) May 2 (gage height, 12.45 ft or 3.795 m); maximum gage height, 14.34 ft (4.371 m) Apr. 27 (backwater from ice); minimum daily discharge, 205 ft³/s (5.81 m³/s) Mar. 12-15; minimum gage height, 3.64 ft (1.109 m) Oct. 1, 2, 3, 4.

Period of record: Maximum discharge, 14,800 ft³/s (419 m³/s) May 8, 9, 1950; maximum gage height, 17.08 ft (5.206 m) May 8, 1950; minimum discharge recorded, 7 ft³/s (0.20 m³/s) Aug. 7, 1939.

REMARKS.--Records good. Prior to 1971, a powerplant, located 0.3 mi (0.5 km) upstream, caused some diurnal fluctuation at low flows. Water-quality records for the current year are published in Section 2 of this report.

REVISIONS (WATER YEARS).--WSP 1308: 1935(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	420	881	510	335	235	210	270	9000	1840	1960	916	545
2	417	1390	490	335	230	210	270	9080	1720	3160	983	530
3	419	1900	480	330	230	210	270	8450	1600	3960	1020	529
4	421	1910	470	330	225	210	270	7780	1520	4580	992	528
5	445	1810	460	325	225	210	270	7380	1640	4650	971	527
6	678	1680	455	325	225	210	270	6930	1820	4060	934	522
7	882	1550	450	320	220	210	270	6380	1850	3460	891	531
8	1040	1430	440	320	220	210	270	5790	1770	3120	843	523
9	1050	1340	430	320	220	210	270	5230	1630	2950	806	523
10	1030	1260	425	315	215	210	270	4730	1510	2540	780	515
11	985	1180	420	310	215	210	270	4300	1410	2340	703	515
12	933	1130	410	310	215	205	270	3930	1400	2110	745	506
13	866	1070	405	305	215	205	280	3600	1450	1850	722	489
14	833	992	400	300	215	205	290	3390	1450	1710	690	483
15	825	801	395	300	215	205	300	3310	1360	1590	673	469
16	830	725	390	295	215	210	350	3190	1280	1500	656	454
17	846	605	380	290	215	215	450	3050	1210	1420	634	440
18	842	632	380	290	215	220	900	2910	1320	1350	621	444
19	805	824	370	285	215	225	1450	2780	1320	1270	605	458
20	775	918	370	280	215	230	1950	2630	1370	1220	589	482
21	739	759	365	280	210	230	2900	2580	1390	1180	584	508
22	713	730	360	275	210	235	4800	2550	1400	1130	590	547
23	689	680	360	270	210	240	5500	2530	1310	1100	608	576
24	671	640	355	265	210	240	7510	2540	1190	1070	604	573
25	660	620	350	265	210	245	8400	2500	1080	1040	601	550
26	638	580	350	260	210	250	8600	2510	969	1020	586	524
27	623	550	345	255	210	250	8400	2400	950	1010	580	510
28	606	540	340	250	210	255	8700	2350	931	979	584	497
29	602	520	340	245	---	260	8800	2260	1250	958	580	490
30	696	510	340	240	---	265	8800	2120	1780	935	570	480
31	780	---	340	240	---	270	---	1960	---	906	555	---
TOTAL	22803	30147	12375	9065	6075	6970	81620	130180	42720	62170	22279	15295
MEAN	736	1005	399	292	217	225	2721	4199	1424	2006	719	510
MAX	1050	1910	510	335	235	270	8800	9080	1850	4650	1020	576
MIN	417	510	340	240	210	205	270	1960	931	906	555	440
CFSM	.50	.69	.27	.20	.15	.15	1.86	2.88	.98	1.37	.49	.35
IN.	.58	.77	.32	.23	.15	.18	2.08	3.32	1.09	1.58	.57	.39

CAL YR 1974 TOTAL 361819 MEAN 991 MAX 8570 MIN 100 CFSM .68 IN 9.22
WTR YR 1975 TOTAL 441707 MEAN 1210 MAX 9080 MIN 205 CFSM .83 IN 11.25

05133500 Rainy River at Manitou Rapids, Minn.

(International gaging station)

LOCATION.--Lat 48°38'04", long 93°54'47", in sec.36, T.160 N., R.26 W., Koochiching County, on left bank at Manitou Rapids, 3.5 mi (5.6 km) east of Manitou Post Office and 4 mi (6 km) west of Indus.

DRAINAGE AREA.--19,400 mi² (50,246 km²), approximately.

PERIOD OF RECORD.--July 1928 to current year. Monthly discharge only for some periods, published in WSP 1308. October 1911 to October 1924 (gage heights only) at site near Birchdale in files of Corps of Engineers. Published as "near Birchdale" 1932-34.

GAGE.--Water-stage recorder. Datum of gage is 1,062.48 ft (323.844 m) above mean sea level, datum of 1929. Prior to Nov. 10, 1934, nonrecording gage at site near Birchdale 7 mi (11 km) downstream at different datum.

AVERAGE DISCHARGE.--47 years, 12,950 ft³/s (366.7 m³/s), 9.06 in/yr (230 mm/yr).

EXTREMES.--Current year: Maximum discharge, 52,600 ft³/s (1,490 m³/s) May 1 (gage height, 17.18 ft or 5.236 m); minimum, 4,920 ft³/s (139 m³/s) Sept. 17, 18, 19 (gage height, 2.56 ft or 0.780 m).
Period of record: Maximum discharge, 71,600 ft³/s (2,030 m³/s) May 12, 1950 (gage height, 21.04 ft or 6.413 m); minimum daily, 928 ft³/s (26.3 m³/s) Dec. 26, 1929.

REMARKS.--Records excellent except those for winter periods, which are good. Diurnal fluctuation caused by powerplant at International Falls. Some regulation at low and medium flows by Rainy and Namakan Lakes.

COOPERATION.--This station is one of the international gaging stations maintained by the United States under agreement with Canada.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10700	11100	14800	12100	11900	11800	11600	52500	15600	19700	9590	8150
2	10800	11600	15200	12100	12000	11700	11800	51000	15100	20600	9570	7500
3	10400	13100	15200	12100	12000	11700	11900	49700	14700	24700	9360	7800
4	10200	15200	15300	11600	12000	11900	12000	47600	14400	29300	9660	8090
5	10300	15900	15500	11200	12000	11900	12100	45400	14000	30600	9410	8320
6	10100	15800	14500	11200	12000	11000	11400	43300	14100	29400	8830	7900
7	8960	15200	13700	11800	12000	11400	11200	41200	14800	28800	8470	7230
8	10500	14700	13600	12000	12000	11200	11000	39700	15100	28700	8620	6660
9	12500	14300	13500	12000	12000	10200	10800	37900	15300	27000	8360	6420
10	13400	14600	13500	11900	12000	9800	10600	35800	15500	24800	7830	6610
11	13400	13900	13500	11900	11900	11000	9200	33800	15000	25300	7750	6480
12	13000	14900	13400	11800	11900	10900	8530	32200	14700	24000	8600	7890
13	12500	16200	13400	12200	12000	10700	8520	30700	14700	24100	8660	6460
14	10700	17100	13400	11900	12000	10500	8310	29500	14600	23100	8580	8470
15	11700	16400	13400	11900	12000	10300	9110	29000	15300	20500	9160	7420
16	12000	16000	13200	12000	11900	9880	10500	28800	15500	19300	9190	5540
17	12200	15800	12800	12000	12000	9030	12500	28600	14900	18500	8440	5000
18	12100	15600	12700	12000	12100	8910	18000	28200	14800	15700	8730	4970
19	12500	16100	13200	12100	11900	9070	22100	27600	15000	14000	8620	4940
20	12500	16900	12800	11900	11900	9020	25200	27000	15300	14300	8560	5000
21	11200	17200	12300	12100	12000	8040	27100	26500	18100	14000	8620	5230
22	11500	17000	11600	12100	12000	10100	28500	26100	19600	13000	8410	5120
23	11700	16900	11700	12000	12000	11000	31000	25900	19800	12900	8480	5070
24	11700	16800	11600	12000	12000	10900	35100	25600	19700	12400	8380	5140
25	11800	16200	11500	12100	11900	10900	44400	25300	20000	12300	7900	5350
26	11800	15800	11400	12200	11600	11500	49400	24600	19500	12100	7520	5510
27	11400	15500	11400	12000	11700	11900	49700	24100	19600	12000	7610	5530
28	10800	15900	11400	11900	11800	12000	50300	21600	18900	11900	8000	5350
29	10900	15100	12100	11800	---	12000	50100	20100	19000	10500	7590	5140
30	10900	14700	12100	11900	---	12000	51600	17400	19500	9650	7800	5120
31	10800	---	12000	12000	---	11800	---	16200	---	10000	8140	---
TOTAL	354960	461500	405700	369800	334500	333930	663370	993400	491500	590050	264920	191250
MEAN	11450	15380	13090	11930	11950	10770	22110	32060	16380	19030	8546	6375
MAX	13400	17200	15500	12200	12100	12000	51600	52500	20000	30600	9660	8470
MIN	8960	11100	11400	11200	11600	8040	8310	16200	14000	9650	7520	4940
CFSM	.59	.79	.67	.61	.62	.56	1.14	1.65	.84	.99	.44	.33
IN.	.68	.88	.78	.71	.64	.64	1.27	1.91	.94	1.14	.51	.37

CAL YR 1974 TOTAL 6434820 MEAN 17630 MAX 61000 MIN 5660 CFSM .91 IN 12.34
WTR YR 1975 TOTAL 5461180 MEAN 14960 MAX 52500 MIN 4940 CFSM .77 IN 10.47

05134200 Rapid River near Baudette, Minn.

LOCATION.--Lat 48°32'10", long 94°33'45", in NE¼ sec.1, T.158 N., R.31 W., Lake of the Woods County, on left bank 20 ft (6 m) upstream from bridge on State Highway 72, 1.2 mi (1.9 km) downstream from North Branch Rapid River, and 12 mi (19 km) south of Baudette.

DRAINAGE AREA.--543 mi² (1,406 km²).

PERIOD OF RECORD.--October 1956 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,093.92 ft (333.427 m) above mean sea level, datum of 1929 (Minnesota Highway Department bench mark).

AVERAGE DISCHARGE.--19 years, 339 ft³/s (9.600 m³/s), 8.48 in/yr (215 mm/yr).

EXTREMES.--Current year: Maximum discharge, 4,090 ft³/s (116 m³/s) Apr. 23 (gage height, 14.76 ft or 4.499 m); minimum, 8.1 ft³/s (0.23 m³/s) Aug. 23 (gage height, 1.74 ft or 0.530 m).
Period of record: Maximum discharge, 5,500 ft³/s (156 m³/s) Apr. 14, 1969 (gage height, 17.86 ft or 5.444 m); minimum, 0.1 ft³/s (0.003 m³/s) Aug. 13, 1961 (gage height, 1.18 ft or 0.360 m).
Flood of May 11, 1950, reached a stage of 21.1 ft (6.431 m), from information by local residents and Minnesota Highway Department (discharge, about 7,000 ft³/s or 198 m³/s).

REMARKS.--Records good except those for winter months, which are fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	93	43	15	14	13	15	2610	373	1170	52	12
2	28	113	39	15	14	13	16	2810	347	1540	75	21
3	37	135	36	14	14	13	16	2740	315	1750	87	32
4	39	143	32	14	14	13	16	2670	306	1720	78	31
5	50	142	30	14	14	13	16	2630	396	1560	66	26
6	110	138	28	14	14	13	16	2570	515	1470	56	25
7	182	140	26	14	14	13	17	2390	510	1450	45	37
8	211	156	25	14	14	13	17	2170	458	1250	37	42
9	212	177	24	14	14	13	17	1960	403	1120	30	45
10	203	196	22	14	14	13	18	1800	384	841	23	34
11	193	193	21	14	14	13	19	1620	346	692	18	26
12	180	180	20	14	14	13	22	1440	342	571	15	20
13	166	159	19	14	14	13	26	1330	361	496	13	24
14	162	111	19	14	14	13	38	1370	384	442	11	16
15	167	117	18	14	14	14	62	1320	386	391	10	12
16	174	185	17	14	14	14	125	1230	369	355	10	13
17	178	180	17	14	14	14	210	1140	309	291	10	11
18	161	143	16	14	14	14	360	1040	280	252	10	13
19	152	122	16	14	14	14	680	975	260	216	9.2	15
20	143	122	16	14	14	14	1200	915	264	193	9.0	26
21	131	128	16	14	14	14	2150	862	408	169	9.0	32
22	125	119	15	14	14	14	3600	809	566	147	8.5	40
23	119	110	15	14	14	14	3910	757	651	127	13	37
24	111	95	15	14	14	14	3660	748	613	113	15	38
25	104	85	15	14	14	14	3070	704	579	101	20	36
26	98	76	15	14	13	14	3200	644	477	96	18	27
27	93	67	15	14	13	14	2960	577	427	89	14	25
28	88	60	15	14	13	15	2790	531	405	76	13	21
29	87	55	15	14	---	15	2730	487	480	58	13	14
30	88	47	15	14	---	15	2750	439	1080	47	11	16
31	86	---	15	14	---	15	---	407	---	46	11	---
TOTAL	3905	3787	650	436	389	424	34126	43865	13256	18701	809.7	770
MEAN	126	126	21.0	14.1	13.9	13.7	1138	1415	442	603	26.1	25.7
MAX	212	196	43	15	14	15	3910	2810	1080	1750	87	45
MIN	27	47	15	14	13	13	15	407	260	46	8.5	11
CFSM	.23	.23	.04	.03	.03	.03	2.10	2.61	.81	1.11	.05	.05
IN.	.27	.26	.04	.03	.03	.03	2.34	3.01	.91	1.28	.06	.05

CAL YR 1974 TOTAL 147835.6 MEAN 405 MAX 3360 MIN 3.2 CFSM .75 IN 10.13
WTR YR 1975 TOTAL 121118.7 MEAN 332 MAX 3910 MIN 8.5 CFSM .61 IN 8.30

05139500 West Branch Warroad River near Warroad, Minn.

LOCATION (revised).--Lat 48°51'57", long 95°21'07", in SW¼NW¼ sec.7, T.162 N., R.36 W., Roseau County, on downstream handrail of bridge near center of span, 0.9 mi (1.4 km) upstream from Bulldog Run and 2.5 mi (4.0 km) south of Warroad.

DRAINAGE AREA.--162 mi² (420 km²), revised.

PERIOD OF RECORD.--March 1946 to current year. Prior to October 1971, published as Warroad River near Warroad. Monthly discharge only for some periods, published in WSP 1308.

GAGE.--Nonrecording gage and crest-stage gage. Datum of gage is 1,070.74 ft (326.362 m) above mean sea level, datum of 1929 (levels by Stanley Johnson, consulting engineer and instructor at University of North Dakota).

AVERAGE DISCHARGE.--29 years, 45.1 ft³/s (1.277 m³/s), 3.78 in/yr (96 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,030 ft³/s (29.2 m³/s) Apr. 25 (gage height, 8.47 ft or 2.582 m); minimum, 0.37 ft³/s (0.010 m³/s) Aug. 30 (gage height, 1.75 ft or 0.533 m).
Period of record: Maximum discharge, 1,780 ft³/s (50.4 m³/s) Apr. 15, 1965 (gage height, 9.95 ft or 3.033 m); no flow at times.

REMARKS.--Records fair.

REVISIONS (WATER YEARS).--WSP 1308: 1949(M). WSP 1508: 1947(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	21	7.3	3.7	3.8	3.7	6.1	610	23	372	8.8	.87
2	16	21	7.0	3.7	3.8	3.7	6.2	575	21	390	8.8	1.3
3	9.9	23	6.6	3.7	3.8	3.7	6.2	549	20	390	9.6	1.3
4	11	22	6.3	3.6	3.8	3.7	6.3	513	19	393	10	1.2
5	18	23	6.1	3.6	3.8	3.7	6.4	466	23	445	8.2	1.0
6	22	24	5.8	3.6	3.8	3.7	6.4	437	31	481	7.7	1.0
7	32	24	5.6	3.6	3.8	3.7	6.5	361	51	450	6.1	1.0
8	46	24	5.3	3.6	3.8	3.7	6.6	291	51	420	5.4	.75
9	48	25	5.1	3.5	3.8	3.7	6.9	244	52	296	3.8	.93
10	44	27	4.9	3.4	3.8	3.7	7.1	198	51	168	3.0	1.4
11	43	28	4.7	3.4	3.8	3.7	7.4	169	50	127	2.5	1.2
12	40	27	4.6	3.3	3.8	3.7	8.0	154	50	102	2.1	1.1
13	39	26	4.5	3.3	3.8	3.7	9.7	141	50	87	2.0	.93
14	34	25	4.4	3.2	3.8	3.9	18	119	51	74	1.8	.81
15	35	24	4.4	3.2	3.8	4.0	35	121	50	64	1.6	.87
16	35	23	4.4	3.2	3.8	4.2	124	117	50	52	1.4	.87
17	35	17	4.4	3.2	3.8	4.7	215	107	51	47	1.3	.75
18	33	17	4.3	3.2	3.8	5.0	369	101	42	39	1.0	1.1
19	31	17	4.3	3.2	3.8	5.5	460	94	35	34	.75	1.1
20	31	16	4.3	3.3	3.8	5.9	575	86	45	30	.69	.93
21	29	18	4.3	3.4	3.8	6.0	614	100	69	25	.69	.93
22	27	16	4.2	3.4	3.8	6.0	768	83	79	22	.81	.87
23	24	14	4.1	3.5	3.8	6.0	860	62	176	19	1.2	1.1
24	23	12	4.1	3.5	3.8	6.0	974	63	365	18	1.2	1.2
25	23	11	4.0	3.5	3.8	6.0	974	55	359	15	1.0	1.1
26	24	9.9	3.9	3.6	3.7	6.0	870	46	228	14	.75	1.0
27	23	9.1	3.9	3.6	3.7	6.0	766	37	184	16	.69	.93
28	23	8.5	3.8	3.7	3.7	6.0	723	38	174	13	.59	1.0
29	22	8.1	3.8	3.7	---	6.0	683	34	250	12	.41	.93
30	21	7.7	3.7	3.7	---	6.0	651	30	328	10	.37	.93
31	21	---	3.7	3.8	---	6.0	---	24	---	9.9	.64	---
TOTAL	881.9	568.3	147.8	107.9	106.1	147.3	9766.8	6025	3028	4614.9	94.89	30.40
MEAN	28.4	18.9	4.77	3.48	3.79	4.75	326	194	101	149	3.06	1.01
MAX	48	28	7.3	3.8	3.8	6.0	974	610	365	481	10	1.4
MIN	9.9	7.7	3.7	3.2	3.7	3.7	6.1	24	19	9.9	.37	.75
CFSM	.26	.17	.04	.03	.03	.04	2.96	1.76	.92	1.35	.03	.009
IN.	.30	.19	.05	.04	.04	.05	3.30	2.04	1.02	1.56	.03	.01

CAL YR 1974 TOTAL 22220.70 MEAN 60.9 MAX 718 MIN .02 CFSM .55 IN 7.51
WTR YR 1975 TOTAL 25510.29 MEAN 69.9 MAX 974 MIN .37 CFSM .64 IN 8.63

05140000 Bulldog Run near Warroad, Minn.

LOCATION (revised).--Lat 48°51'30", long 95°20'18", in SW¼SE¼ sec.7, T.162 N., R.36 W., Roseau County, near right bank 5 ft (2 m) downstream from culvert on county highway, 0.8 mi (1.3 km) upstream from mouth and 2.5 mi (4.0 km) south of Warroad.

DRAINAGE AREA.--11.1 mi² (28.7 km²), revised.

PERIOD OF RECORD.--March 1946 to November 1951, June 1966 to current year.

GAGE.--Nonrecording gage and crest-stage gage. Altitude of gage is 1,090 ft (322 m), from topographic map.

AVERAGE DISCHARGE.--14 years (1946-51, 1967-75), 3.57 ft³/s (0.101 m³/s), 4.37 in/yr (111 mm/yr).

EXTREMES.--Current year: Maximum discharge, 151 ft³/s (4.28 m³/s) Apr. 17 (gage height, 6.33 ft or 1.929 m); no flow for many days.
Period of record: Maximum discharge, 420 ft³/s (11.9 m³/s) June 10, 1947 (gage height, 6.91 ft or 2.106 m); maximum gage height, 7.07 ft (2.155 m) Apr. 14, 1974; no flow for many days in most years.

REMARKS.--Records poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	.08					.01	23	.19	36		
2	0	.12					.03	19	.18	76		
3	0	.17					.07	17	.18	69		
4	.01	.17					.20	14	.28	39		
5	.01	.16					.22	11	.90	22		
6	.03	.18					.30	8.4	1.6	10		
7	.08	.17					.36	6.3	1.6	7.8		
8	.17	.17					.37	5.2	1.5	5.8		
9	.19	.16					.46	4.3	1.4	4.2		
10	.24	.16					.48	3.6	1.4	2.2		
11	.40	.15					.70	2.7	1.4	1.4		
12	.34	.13					2.1	2.4	1.4	.86		
13	.34	.10					11	1.9	1.3	.52		
14	.28	.08					12	1.7	1.1	.40		
15	.28	.06					13	1.6	1.1	.24		
16	.22	.04					67	1.6	1.1	.16		
17	.22	.03					150	1.5	1.2	.07		
18	.18	.03					146	1.2	1.2	.02		
19	.18	.02					108	.98	1.3	.01		
20	.18	.02					31	.98	1.4	0		
21	.15	.01					58	.82	1.6	0		
22	.15	.01					74	.69	7.7	0		
23	.12	.01					99	.58	42	0		
24	.12	0					108	.50	32	0		
25	.09	0					73	.42	20	0		
26	.09	0					46	.38	12	0		
27	.08	0					30	.30	8.9	0		
28	.08	0					35	.26	7.8	0		
29	.07	0			---		35	.22	6.8	0		
30	.07	0			---		31	.19	11	0		
31	.07	---			---		---	.15	---	0		---
TOTAL	4.44	2.23	0	0	0	0	1132.30	132.87	171.53	275.68	0	0
MEAN	.14	.074	0	0	0	0	37.7	4.29	5.72	8.89	0	0
MAX	.40	.18	0	0	0	0	150	23	42	76	0	0
MIN	0	0	0	0	0	0	.01	.15	.18	0	0	0
CFSM	.010	.005	0	0	0	0	2.65	.30	.40	.63	0	0
IN.	.01	.006	0	0	0	0	2.97	.35	.45	.72	0	0

CAL YR 1974 TOTAL 1666.21 MEAN 4.57 MAX 273 MIN 0 CFSM .32 IN 4.36
WTR YR 1975 TOTAL 1719.05 MEAN 4.71 MAX 150 MIN 0 CFSM .33 IN 4.50

05140500 East Branch Warroad River near Warroad, Minn.

LOCATION (revised).--Lat 48°51'29", long 95°18'40", in NE¼NE¼ sec.17, T.162 N., R.36 W., Roseau County, near right bank on piling at upstream side of highway bridge, 3.3 mi (5.3 km) upstream from mouth and 2.5 mi (4.0 km) south of Warroad.

DRAINAGE AREA.--45.8 mi² (119 km²), revised.

PERIOD OF RECORD.--March 1946 to September 1954, June 1966 to current year. Monthly discharge only for some periods prior to April 1947, published in WSP 1308.

GAGE.--Nonrecording gage and crest-stage gage. Altitude of gage is 1,080 ft (329 m) from topographic map.

AVERAGE DISCHARGE.--17 years (1946-54, 1966-75), 24.5 ft³/s (0.694 m³/s), 7.26 in/yr (184 mm/yr).

EXTREMES.--Current year: Maximum discharge, 790 ft³/s (22.4 m³/s) Apr. 23 (gage height, 8.87 ft or 2.704 m); minimum daily discharge, 0.70 ft³/s (0.020 m³/s) Aug. 30.

Period of record: Maximum discharge, 1,340 ft³/s (37.9 m³/s) June 11, 1947 (gage height, 9.36 ft or 2.853 m, from floodmark); no flow at times in most years.

REMARKS.--Records fair except those for winter period and period of indefinite stage-discharge relation, which are poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	20	8.7	4.7	3.7	2.9	3.5	322	25	99	5.7	1.0
2	20	20	8.3	4.6	3.6	2.9	3.5	302	25	88	6.4	1.4
3	22	20	8.0	4.6	3.6	2.9	3.5	302	24	86	6.2	1.7
4	14	21	7.6	4.5	3.5	2.9	3.5	273	23	82	5.6	1.5
5	26	21	7.4	4.4	3.5	2.8	3.5	250	23	78	4.8	1.2
6	27	22	7.0	4.4	3.5	2.8	3.5	222	25	74	4.4	1.2
7	28	22	6.7	4.3	3.4	2.7	3.6	208	25	72	3.6	1.2
8	29	23	6.4	4.2	3.4	2.7	3.6	183	25	69	3.0	1.0
9	30	23	6.2	4.0	3.3	2.6	3.8	162	30	66	2.6	1.4
10	30	24	5.9	4.0	3.3	2.6	3.9	157	33	41	2.4	1.7
11	29	23	5.8	3.9	3.3	2.6	4.1	152	36	35	2.3	1.4
12	28	22	5.7	3.9	3.2	2.6	4.5	137	35	31	2.1	1.2
13	27	20	5.6	3.9	3.2	2.6	5.1	88	33	28	1.9	1.1
14	28	19	5.6	3.8	3.1	2.6	7.2	84	35	28	1.7	1.0
15	28	20	5.6	3.8	3.1	2.7	12	80	33	25	1.5	1.0
16	28	20	5.6	3.8	3.1	2.7	59	77	32	22	1.3	1.0
17	27	20	5.6	3.8	3.1	2.8	90	73	32	21	1.2	1.0
18	27	20	5.6	3.7	3.1	2.9	119	67	33	20	1.0	1.0
19	26	21	5.5	3.7	3.1	3.0	140	65	36	16	.90	1.1
20	23	21	5.4	3.7	3.1	3.1	179	61	34	16	.82	1.3
21	24	20	5.4	3.7	3.1	3.1	190	58	47	14	.86	1.2
22	24	18	5.3	3.7	3.1	3.1	274	53	80	13	1.0	1.2
23	22	16	5.2	3.7	3.1	3.1	510	53	154	11	1.3	1.2
24	21	14	5.2	3.7	3.1	3.1	510	53	107	11	1.6	1.4
25	20	13	5.2	3.7	3.0	3.2	546	50	86	11	1.2	1.3
26	19	12	5.2	3.7	3.0	3.2	451	38	76	11	1.0	1.3
27	19	11	5.1	3.7	3.0	3.3	397	37	72	11	.88	1.2
28	20	10	5.0	3.7	2.9	3.3	369	32	68	10	.78	1.2
29	20	9.7	5.0	3.7	---	3.4	350	31	65	9.9	.74	1.2
30	20	9.2	4.9	3.7	---	3.4	350	28	81	7.8	.70	1.2
31	20	---	4.8	3.7	---	3.5	---	27	---	5.4	.72	---
TOTAL	744	554.9	184.5	122.4	90.5	91.1	4602.8	3725	1436	1112.1	70.20	36.8
MEAN	24.0	18.5	5.95	3.95	3.23	2.94	153	120	47.9	35.9	2.26	1.23
MAX	30	24	8.7	4.7	3.7	3.5	546	322	154	99	6.4	1.7
MIN	14	9.2	4.8	3.7	2.9	2.6	3.5	27	23	5.4	.70	1.0
CFSM	.24	.18	.06	.04	.03	.03	1.50	1.18	.47	.35	.02	.01
IN.	.27	.20	.07	.04	.03	.03	1.68	1.36	.52	.41	.03	.01

CAL YR 1974 TOTAL 15427.80 MEAN 42.3 MAX 444 MIN 1.5 CFSM .41 IN 5.63
WTR YR 1975 TOTAL 12770.30 MEAN 35.0 MAX 546 MIN .70 CFSM .34 IN 4.66

NOTE.--No gage-height record Dec. 26 to Feb. 16. Indefinite stage-discharge relation Aug. 2 to Sept. 30.

MISSISSIPPI RIVER MAIN STEM

05201000 Winnibigoshish Lake near Deer River, Minn.

LOCATION.--Lat 47°25'42", long 94°03'00", in sec.25, T.146 N., R.27 W., Itasca County, at dam on Mississippi River, 1 mi (1.6 km) northwest of Little Winnibigoshish Lake, 14 mi (23 km) northwest of town of Deer River, and at mile 1,248 (2,008 km) upstream from Ohio River.

DRAINAGE AREA.--1,442 mi^2 (3,735 km^2).

PERIOD OF RECORD.--April 1884 to current year. Prior to October 1941 monthend contents only, published in WSP 1308. Published as Winnibigoshish Reservoir near Deer River October 1941 to September 1956.

GAGE.--Water-stage recorder. Datum of gage is 1,200.00 ft (365.76 m) above mean sea level, datum of 1929. Prior to July 8, 1949, nonrecording gage at same site, and July 9, 1949, to July 10, 1973, water-stage recorder at same site and at datum 88.94 ft (27.11 m) higher.

EXTREMES.--Current year: Maximum contents, 693,300 acre-ft (855 hm^3) July 11 (elevation, 1,300.54 ft or 396.405 m); minimum, 454,800 acre-ft (561 m) Mar. 23 (elevation, 1,297.26 ft or 395.405 m).
Period of record: Maximum contents observed, 996,500 acre-ft (1,229 km^3) July 30, 1905 (elevation, 1,303.39 ft or 397.273 m); minimum observed, 33,680 acre-ft (41.5 hm^3) below zero of capacity table Oct. 20, 1931 (elevation, 1,288.25 ft or 392.659 m).

REMARKS.--Reservoir is formed by Winnibigoshish Lake and several other natural lakes controlled by a concrete and timber dam, completed in 1884; storage began in 1884. Capacity between elevations 1,294.94 ft (394.70 m) and 1,303.14 ft (397.20 m)(maximum allowable range) is 653,570 acre-ft (806 hm^3) of which 416,270 acre-ft (513 hm^3) is controlled storage between elevations 1,294.94 ft (394.70 m) and 1,300.94 ft (396.53 m)(normal operating range). Contents shown herein are contents above elevation 1,288.94 ft (392.87 m). Water is used to benefit navigation on Mississippi River below Minneapolis.

COOPERATION.--Records furnished by Corps of Engineers.

REVISION (WATER YEARS).--WSP 1308: 1905(M).

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.30	98.90	562,700	-
Oct. 31	98.85	559,500	-3,200
Nov. 30	98.60	543,000	-16,500
Dec. 31	98.33	525,100	-17,900
CAL YR 1974	-	-	-18,500
Jan. 31	98.05	506,700	-18,400
Feb. 28	97.60	477,100	-29,600
Mar. 31	97.30	457,400	-19,700
Apr. 30	98.35	526,500	+69,100
May 31	99.47	603,500	+77,000
June 30	99.63	614,900	+11,400
July 31	100.06	648,400	+33,500
Aug. 31	99.05	573,300	-75,100
Sept.30	98.65	546,300	-27,000
WTR YR 1975	-	-	-16,400

NOTE.--Add 1,200.00 ft to obtain elevation above mean sea level.

05201500 Mississippi River at Winnibigoshish Dam near Deer River, Minn.

LOCATION.--Lat 47°25'42", long 94°03'00", in SW¼ sec.25, T.146 N., R.27 W., Itasca County, at dam 1 mi (2 km) northwest of Little Winnibigoshish Lake, 14 mi (23 km) northwest of town of Deer River, and at mile 1,248 (2,008 km) upstream from Ohio River.

DRAINAGE AREA.--1,442 mi² (3,735 km²).

PERIOD OF RECORD.--May 1884 to current year. Monthly discharge only for some periods, published in WSP 1308.

GAGE.--Water-stage recorder on headwater and nonrecording gage on tailwater. Datum of gage is at mean sea level, datum of 1929. Prior to June 30, 1973, gages at same sites with datum at 1,289.47 ft (393.03 m) above mean sea level, adjustment of 1912. Prior to July 8, 1949, nonrecording headwater gage at same site and datum in use.

AVERAGE DISCHARGE (unadjusted).--91 years, 516 ft³/s (14.6 m³/s), 4.86 in/yr (123 mm/yr).

EXTREMES.--Current year: Maximum daily discharge, 1,480 ft³/s (41.9 m³/s) Aug. 9-11, 13; minimum daily, 120 ft³/s (3.40 m³/s) Apr. 17-23.

Period of record: Maximum daily discharge, 4,370 ft³/s (124 m³/s) Aug. 6, 1905; no flow at times in several years.

REMARKS.--Daily discharge is computed on the basis of modified weir formula and corrected to conform with discharge measurements, the head being determined from readings of headwater and tailwater gages. Flow completely regulated by Winnibigoshish Lake (see preceding page).

COOPERATION.--Daily discharge computed by Corps of Engineers; records reviewed by Geological Survey.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	181	790	844	924	1000	995	655	122	1030	821	1320	1440
2	181	792	844	924	1000	993	655	122	1030	715	1360	1440
3	181	793	844	924	1000	993	538	122	1030	720	1440	1440
4	181	793	844	1010	1000	993	536	122	1030	250	1440	1450
5	181	850	844	1010	1000	993	420	123	1030	244	1450	1440
6	181	850	844	1010	1000	993	420	123	1030	244	1430	1450
7	181	850	844	1010	1000	993	420	123	1030	433	1430	1450
8	181	850	844	1010	1000	991	420	123	1030	560	1460	1440
9	181	850	843	1010	1000	991	420	123	1030	663	1480	1440
10	181	850	843	1010	1000	991	420	246	1030	807	1480	1440
11	181	850	843	1010	1000	991	420	246	1030	994	1480	1440
12	181	850	843	1010	1000	991	239	246	1030	1220	1470	1450
13	181	850	843	1010	1000	991	239	371	1030	1340	1480	1440
14	181	850	843	1010	1000	989	239	494	1030	1340	1470	1440
15	181	851	843	1010	1000	989	239	560	1030	1340	1470	1440
16	181	848	843	1010	1000	989	239	559	1030	1340	1470	1440
17	181	848	843	1010	996	989	120	797	1030	1330	1470	1440
18	181	848	843	1010	996	989	120	798	1030	1330	1470	1440
19	181	848	843	1010	996	986	120	798	1030	1330	1460	1440
20	181	850	843	1000	996	978	120	798	1030	1330	1460	1160
21	181	850	843	1000	996	978	120	798	1030	1330	1470	1180
22	419	846	841	1000	996	768	120	799	1030	1330	1460	1170
23	419	846	843	1000	996	767	120	908	1030	1330	1440	996
24	419	846	843	1000	995	768	121	1030	1030	1330	1440	1000
25	419	846	841	1000	995	768	121	1030	1030	1330	1440	1000
26	526	846	841	1000	995	768	121	1030	1030	1330	1450	1000
27	526	846	841	1000	995	768	121	1030	1030	1330	1450	1000
28	526	846	841	1000	995	768	121	1030	1030	1330	1440	1000
29	526	846	841	1000	---	768	121	1030	1030	1330	1440	1000
30	734	846	841	1000	---	768	122	1030	1030	1330	1440	1000
31	792	---	924	1000	---	768	---	1030	---	1320	1440	---
TOTAL	9107	25225	26208	30932	27947	28465	8205	17761	30900	32971	44880	38886
MEAN	294	841	845	998	998	918	274	573	1030	1064	1448	1296
MAX	792	851	924	1010	1000	995	655	1030	1030	1340	1480	1450
MIN	181	790	841	924	995	767	120	122	1030	244	1320	996
CFSM	.20	.58	.59	.69	.69	.64	.19	.40	.71	.74	1.00	.90
IN.	.23	.65	.68	.80	.72	.73	.21	.46	.80	.85	1.16	1.00

CAL YR 1974 TOTAL 249796 MEAN 684 MAX 1420 MIN 123 CFSM .47 IN 6.44
WTR YR 1975 TOTAL 321487 MEAN 881 MAX 1480 MIN 120 CFSM .61 IN 8.29

05206000 Leech Lake at Federal Dam, Minn.

LOCATION.--Lat 47°12'23", long 94°18'31", in lot 2, sec.14, T.143 N., R.29 W., Cass County, at head of Leech Lake River on Waboose Bay, 5 mi (8 km) southwest of town of Federal Dam.

DRAINAGE AREA.--1,163 mi^2 (3,012 km^2).

PERIOD OF RECORD.--April 1884 to current year. Monthend contents only for some periods, published in WSP 1308. Prior to October 1956, published as "Leech Lake Reservoir."

GAGE.--Water-stage recorder. Datum of gage is 1,200.00 ft (365.76 m) above mean sea level, datum of 1929. Prior to Dec. 31, 1884, nonrecording gage 0.5 mi (0.8 km) north of outlet to Leech Lake River at datum 98.47 ft (30.01 m) higher. Dec. 31, 1884, to May 24, 1931, nonrecording gage 0.5 mi (0.8 m) north of outlet to Leech Lake River and May 25, 1931 to July 10, 1973, water-stage recorder at same site and at datum 92.70 ft (28.25 m) higher.

EXTREMES.--Current year: Maximum contents, 452,600 acre-ft (558 hm^3) July 11 (elevation, 1,296.02 ft or 395.027 m); minimum, 214,100 acre-ft (264 hm^3) Mar. 21 (elevation, 1,294.13 ft or 394.451 m).

Period of record: Maximum contents observed, 734,300 acre-ft (905 hm^3) June 30, 1916 (elevation, 1,297.88 ft or 395.594 m); minimum observed, 72,830 acre-ft (89.8 hm^3) below zero of capacity table Sept. 30, Nov. 19, 1934, Jan. 9, 1935 (elevation, 1,291.52 ft or 393.655 m).

REMARKS.--Reservoir is formed by Leech Lake and several other natural lakes controlled by concrete and timber dam; storage began in 1884; original timber structure completed in 1884, replaced by present dam in 1902. Capacity between elevation 1,292.70 ft (394.015 m) and 1,297.94 ft (395.612 m)(maximum allowable range) is 689,780 acre-ft (850 hm^3) of which 356,570 acre-ft (440 hm^3) is controlled storage between elevations 1,292.70 ft (394.015 m) and 1,295.70 ft (394.929 m)(normal operating range). Contents shown herein are contents above elevation 1,292.20 ft (393.863 m). Water is used to benefit navigation on Mississippi River below Minneapolis.

COOPERATION.--Records furnished by Corps of Engineers.

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.30	94.56	266,600	-
Oct. 31	94.56	266,600	0
Nov. 30	94.61	272,700	+6,100
Dec. 31	94.40	247,000	-25,700
CAL YR 1974	-	-	-49,300
Jan. 31	94.46	254,400	+7,400
Feb. 28	94.26	229,900	-24,500
Mar. 31	94.27	231,200	+1,300
Apr. 30	94.96	316,600	+85,400
May 31	95.50	384,800	+68,200
June 30	95.52	387,400	+2,600
July 31	95.64	402,500	+15,100
Aug. 31	94.95	315,300	-87,200
Sept.30	94.65	277,600	-37,700
WTR YR 1975	-	-	+11,000

NOTE.--Add 1,200 ft to obtain elevation above mean sea level.

05206500 Leech Lake River at Federal Dam, Minn.

LOCATION.--Lat 47°14'45, long 94°13'12", in sec. 29, T.144 N., R.28 W., Cass County, on right bank at dam on Leech Lake River at town of Federal Dam, 2 mi (3 km) downstream from natural outlet of Leech Lake.

DRAINAGE AREA.--1,163 mi² (3,012 km²).

PERIOD OF RECORD.--May 1884 to current year. Monthly discharge only for some periods, published in WSP 1308.

GAGE.--Water-stage recorder, headwater gage, and nonrecording tailwater gage. Datum of gage is at mean sea level, datum of 1929. Prior to June 30, 1973, gages (nonrecording headwater gage prior to July 3, 1948) at same sites with datum at 1,293.23 ft (394.18 m) above mean sea level, adjustment of 1912. May 27 to Nov. 30, 1929, nonrecording gage at site 600 ft (183 m) downstream at different datum.

AVERAGE DISCHARGE (unadjusted).--91 years, 358 ft³/s (10.14 m³/s), 4.18 in/yr (106 mm/yr).

EXTREMES.--Current year: Maximum daily discharge, 1,020 ft³/s (28.9 m³/s) July 13-16, 20; minimum daily, 76 ft³/s (2.15 m³/s) Oct. 4.
Period of record: Maximum daily discharge, 2,520 ft³/s (71.4 m³/s) June 7, 1957 (result of dam failure); no flow at times.

REMARKS.--Discharge computed on basis of modified weir formula, the head being obtained from readings on tailwater gage and mean gage height from recording headwater gage. Flow completely regulated by Leech Lake (see preceding page).

COOPERATION.--Computations of daily discharge furnished by Corps of Engineers; discharge measurements made and records reviewed by Geological Survey.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	79	218	688	682	760	782	428	174	990	700	970	909
2	86	220	688	675	760	782	428	174	990	700	970	907
3	80	220	675	675	760	782	321	176	980	306	970	886
4	76	220	675	682	760	773	321	176	960	106	960	911
5	77	220	682	675	760	773	270	176	980	100	950	910
6	80	220	682	675	791	773	270	176	990	122	950	889
7	86	220	688	675	791	773	270	176	980	252	997	888
8	86	220	655	675	791	773	270	300	970	252	997	890
9	84	399	621	675	782	773	270	300	970	346	984	885
10	85	399	628	675	782	773	270	416	970	502	984	885
11	110	399	641	689	782	773	270	416	970	719	971	885
12	108	500	668	675	782	773	270	416	970	936	970	885
13	110	500	682	682	782	773	270	497	970	1020	969	882
14	112	702	682	682	782	773	270	497	970	1020	995	882
15	116	695	682	675	782	773	270	502	960	1020	994	882
16	110	695	682	682	782	773	270	502	960	1020	993	880
17	109	709	682	682	782	756	166	502	960	1010	993	877
18	109	695	682	728	782	756	168	502	960	1010	980	875
19	109	688	682	728	782	756	168	502	960	1010	978	887
20	109	695	682	728	782	712	168	502	970	1020	914	884
21	110	688	682	728	782	525	168	502	970	1010	914	881
22	109	688	662	728	782	530	168	700	980	1000	914	880
23	109	688	675	728	782	525	168	700	980	1000	911	879
24	109	688	662	728	782	525	170	810	980	1000	911	877
25	109	682	662	728	791	530	170	810	970	1000	917	877
26	109	675	648	728	791	530	171	810	960	990	943	877
27	109	668	668	728	782	530	171	810	970	990	915	876
28	109	668	655	760	782	530	171	901	970	990	915	875
29	109	668	668	760	---	535	171	990	970	980	915	875
30	218	668	668	760	---	535	171	990	960	980	908	877
31	218	---	675	760	---	535	---	990	---	970	910	---
TOTAL	3339	15615	20772	21851	21831	21205	7107	16095	29160	24083	29562	26553
MEAN	108	521	670	705	780	684	237	519	972	777	954	885
MAX	218	709	688	760	791	782	428	990	990	1020	997	911
MIN	76	218	621	675	760	525	166	174	960	100	908	875
CFSM	.09	.45	.58	.61	.67	.59	.20	.45	.84	.67	.82	.76
IN.	.11	.50	.66	.70	.70	.68	.23	.51	.93	.77	.95	.85

CAL YR 1974 TOTAL 207054 MEAN 567 MAX 1000 MIN 76 CFSM .49 IN 6.62
WTR YR 1975 TOTAL 237173 MEAN 650 MAX 1020 MIN 76 CFSM .56 IN 7.59

05210500 Pokegama Lake near Grand Rapids, Minn.

LOCATION.--Lat 47°10'00", long 93°33'20", in NW¼ sec.17, T.54 N., R.25 W., Itasca County, at narrows on U.S. Highway 169, 4 mi (6 km) south of Grand Rapids and at mile 1,184 (1,905 km) upstream from Ohio River.

DRAINAGE AREA.--3,265 mi^2 (8,456 km^2).

PERIOD OF RECORD.--April 1884 to current year. Prior to October 1941 monthend contents only, published in WSP 1308. Published as Pokegama Reservoir near Grand Rapids October 1941 to September 1956.

GAGE.--Water-stage recorder. Datum of gage is 1,200.00 ft (365.76 m) above mean sea level, datum of 1929. Prior to May 30, 1949, nonrecording gage at Pooles Arm of Pokegama Lake 5 mi (8 km) northwest and May 31, 1949, to July 12, 1973, water-stage recorder at same site and at datum 64.42 ft (19.64 m) higher.

EXTREMES.--Current year: Maximum contents, 108,200 acre-ft (133 hm^3) May 6 (elevation, 1,277.00 ft or 389.230 m); minimum, 17,530 acre-ft (21.6 hm^3) Apr. 16 (elevation, 1,270.35 ft or 387.203 m).

Period of record: Maximum contents, 121,400 acre-ft (150 hm^3) May 8, 1897 (elevation, 1,277.92 ft or 389.510 m); minimum observed, 4,520 acre-ft (5.57 hm^3) below zero of capacity table Sept. 30, 1934 (elevation, 1,268.54 ft or 386.651 m).

REMARKS.--Reservoir is formed by Pokegama Lake and several other natural lakes controlled by concrete dam; storage began in 1884; original timber dam completed in 1884, replaced by present structure in 1888-89. Capacity between elevation 1,270.42 ft (387.224 m) and 1,276.42 ft (389.053 m)(maximum allowable range) is 81,720 acre-ft (101 hm^3) of which 53,150 acre-ft (65.5 m) is controlled storage between elevations 1,270.42 ft (387.224 m) and 1,274.42 ft (388.443 m)(normal operating range). Contents shown herein are contents above elevation 1,268.92 ft (386.767 m). Water is used to benefit navigation on Mississippi River below Minneapolis.

COOPERATION.--Records furnished by Corps of Engineers.

REVISIONS (WATER YEARS).--WSP 1914: 1897(M).

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.30	73.50	58,270	-
Oct. 31	73.10	52,810	-5,460
Nov. 30	72.28	42,000	-10,810
Dec. 31	72.12	39,910	-2,090
CAL YR 1974	-	-	+12,010
Jan. 31	71.89	36,910	-3,000
Feb. 28	71.52	32,210	-4,700
Mar. 31	71.65	33,860	+1,650
Apr. 30	75.19	82,400	+48,540
May 31	74.15	67,550	-14,850
June 30	73.84	63,120	-4,430
July 31	74.10	66,840	+3,720
Aug. 31	73.52	58,550	-8,290
Sept.30	73.47	57,840	-710
WTR YR 1975	-	-	-430

NOTE.--Add 1,200.00 ft to obtain elevation above mean sea level.

05211000 Mississippi River at Grand Rapids, Minn.

LOCATION.--Lat 47°13'56", long 93°31'48", in SW¼NW¼ sec.21, T.55 N., R.25 W., Itasca County, on left bank, in super-calendar room of Blandin Paper Mill in Grand Rapids, 400 ft (122 m) downstream from Blandin Dam, 400 ft (122 m) upstream from bridge on U.S. Highway 169, 2.5 mi (4.0 km) upstream from Prairie River, and at mile 1,182 (1,902 km) upstream from Ohio River.

DRAINAGE AREA.--3,370 mi² (8,730 km²), approximately.

PERIOD OF RECORD.--October 1883 to current year. Monthly discharge only for some periods, published in WSP 1308. Published as "at Pokegama Dam near Grand Rapids" 1942-44.

GAGE.--Water-stage recorder. Datum of gage is 1,242.03 ft (378.57 m) above mean sea level, adjustment of 1929. See WSP 1914 for history of changes prior to Jan. 17, 1951.

AVERAGE DISCHARGE.--92 years, 1,163 ft³/s (32.94 m³/s).

EXTREMES.--Current year: Maximum discharge, 3,860 ft³/s (109 m³/s) May 22 (gage height, 9.82 ft or 2.993 m); maximum gage height, 10.29 ft (3.136 m) July 10; minimum discharge, 321 ft³/s (9.09 m³/s) Oct. 6 (gage height, 3.27 ft or 0.997 m).

Period of record: Maximum discharge, 12,500 ft³/s (354 m³/s) Sept. 3, 1948 (gage height, 15.2 ft or 4.633 m, from floodmark), caused by dam failure at gage, from rating curve extended above 4,500 ft³/s (127 m³/s) by logarithmic plotting; maximum daily, 5,250 ft³/s (149 m³/s) Sept. 5, 8, 1905; no flow at times in several years.

REMARKS.--Records fair. Flow regulated by Winnibigoshish Lake (see Sta 05201000), Leech Lake (see Sta 05206000), Pokegama Lake (see Sta 05210500) and occasionally at low flow by powerplant at Blandin Dam. Backwater from Prairie River occurs at times in most years.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	487	1210	1670	1870	1810	2040	2140	624	2840	1720	3020	2720
2	510	1300	1650	1900	1820	2040	2120	735	2690	1820	2970	2560
3	510	1310	1660	1940	1830	2030	2110	1190	2420	1110	2940	2700
4	510	1420	1660	2020	1850	2070	2090	1600	2440	1470	2930	2710
5	510	1480	1660	2020	1840	2020	2060	1900	2300	1880	2920	2750
6	354	1600	1650	2020	2300	2010	2050	2320	2290	2280	2860	2760
7	474	1700	1660	1960	2180	1980	2020	2500	2290	2620	2810	2790
8	684	1810	1660	1920	2100	1960	2000	2560	2280	2880	2670	2790
9	619	1900	1650	1920	2100	1970	1940	2760	2230	3120	2810	2760
10	629	1900	1660	1920	2100	1980	1910	2860	2230	3120	2790	2850
11	624	1890	1640	1900	2100	1960	1910	2850	2260	3130	2760	2850
12	629	1890	1640	1840	2100	2020	1890	2900	2570	3030	2760	2930
13	585	1890	1670	1670	2100	2000	1880	2740	2470	3090	2690	2860
14	619	1890	1640	1710	2100	2010	1840	2920	2610	3130	2620	2860
15	594	1890	1660	1720	2100	2010	1810	2980	2580	3290	2510	2830
16	594	1880	1660	1720	2100	1970	1810	3030	2550	2980	2510	2830
17	629	1870	1630	1710	2090	1970	1930	3100	2720	3180	2490	2800
18	644	1860	1680	1720	2080	1980	2120	3080	2640	3390	2440	2900
19	624	1840	1680	1720	2070	1990	2080	3100	2620	3290	2480	2900
20	619	1820	1650	1720	2080	2010	1940	3150	2760	3150	2360	2880
21	629	1810	1690	1730	2100	2120	2100	3350	2760	2860	2410	2820
22	614	1810	1700	1750	2160	2290	2180	3740	2720	3290	2510	2800
23	654	1800	1720	1760	2160	2320	2410	3700	2750	3380	2470	2800
24	694	1790	1750	1780	2150	2330	1810	3750	2320	3300	2500	2790
25	674	1780	1720	1790	2130	2300	730	3650	2500	3350	2600	2780
26	724	1790	1800	1800	2030	2270	796	3610	2710	3390	2250	2770
27	730	1770	1810	1800	1990	2220	869	3020	2670	3350	2560	2760
28	740	1750	1810	1800	2010	2290	848	3090	2810	3290	2500	2730
29	760	1720	1740	1800	---	2280	869	3050	2920	3240	2650	2710
30	863	1690	1720	1810	---	2310	884	3010	2630	2960	2570	2700
31	1090	---	1800	1810	---	2140	---	2960	---	3100	2620	---
TOTAL	19550	52060	52410	56550	57580	64890	53146	86229	76580	89190	81980	83690
MEAN	631	1735	1691	1824	2056	2093	1772	2782	2553	2877	2645	2790
MAX	1090	1900	1810	2020	2300	2330	2410	3750	2920	3390	3020	2930
MIN	354	1210	1630	1670	1810	1960	730	624	2230	1110	2250	2560

CAL YR 1974 TOTAL 645426 MEAN 1768 MAX 3200 MIN 354
WTR YR 1975 TOTAL 773855 MEAN 2120 MAX 3750 MIN 354

05212700 Prairie River near Taconite, Minn.

LOCATION.--Lat 47°23'20", long 93°22'50", in NW¼SW¼ sec.27, T.57 N., R.24 W., Itasca County, on left bank 125 ft (38 m) upstream from highway bridge, 1.5 mi (2.4 km) downstream from outlet of Lawrence Lake and 5 mi (8 km) north of Taconite.

DRAINAGE AREA.--360 mi² (932 km²), approximately.

PERIOD OF RECORD.--April 1967 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,294.81 ft (394.66 m) above mean sea level, datum of 1929. Prior to Aug. 31, 1967, nonrecording gage at site 125 ft (38 m) downstream at same datum.

AVERAGE DISCHARGE.--8 years, 252 ft³/s (7.137 m³/s), 9.51 in/yr (242 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,460 ft³/s (69.7 m³/s) May 1 (gage height, 11.04 ft or 3.365 m); minimum, 35 ft³/s (0.99 m³/s) Oct. 3 (gage height, 2.23 ft or 0.680 m); minimum gage height, 2.12 ft (0.646 m) Aug. 20.

Period of record: Maximum discharge, 3,250 ft³/s (92.0 m³/s) Apr. 17, 1969 (gage height, 11.81 ft or 3.600 m); minimum, 7.0 ft³/s (0.20 m³/s) Oct. 5, 1970 (gage height, 1.75 ft or 0.533 m).

REMARKS.--Records fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	131	101	78	92	90	160	2440	380	800	102	80
2	39	157	100	78	92	89	155	2390	336	900	94	77
3	37	169	93	78	93	88	152	2280	303	1000	88	83
4	43	190	90	78	93	88	148	2120	267	1100	85	82
5	58	212	88	78	93	88	144	1980	254	1150	80	81
6	61	231	87	78	93	87	138	1790	234	1150	76	78
7	63	245	92	77	93	86	134	1620	219	1140	68	82
8	66	251	93	77	92	86	130	1470	210	1100	61	84
9	71	256	92	77	92	85	118	1350	205	1050	60	81
10	75	254	89	76	91	84	108	1210	200	1000	58	80
11	81	249	86	76	90	84	100	1110	200	930	53	82
12	86	239	80	76	90	84	95	1030	205	860	51	77
13	83	225	76	80	90	83	100	968	210	800	50	74
14	88	214	74	86	90	83	115	920	225	750	48	70
15	86	205	74	87	90	82	143	868	240	696	47	68
16	85	193	74	88	91	83	195	816	260	648	45	66
17	86	179	77	88	92	84	301	774	290	580	44	63
18	85	170	78	88	92	86	441	741	310	520	42	64
19	86	165	78	88	92	88	577	701	315	450	39	70
20	85	164	79	88	92	90	630	664	305	400	38	79
21	83	153	79	88	92	94	800	693	290	340	38	84
22	87	147	80	88	92	98	1000	699	290	290	37	89
23	87	142	80	88	92	108	1200	685	300	250	39	97
24	89	135	80	89	92	118	1400	689	310	220	43	101
25	90	125	80	90	92	130	1690	666	330	190	50	105
26	89	116	80	90	91	140	1840	643	350	170	56	110
27	89	115	80	90	90	152	1990	608	400	160	63	110
28	91	112	80	91	90	163	2150	574	480	145	70	110
29	97	108	79	91	---	165	2290	531	600	130	73	109
30	99	106	79	91	---	164	2300	482	700	120	73	110
31	102	---	79	92	---	162	---	429	---	110	74	---
TOTAL	2408	5358	2577	2608	2564	3212	20744	33921	9218	19149	1845	2546
MEAN	77.7	179	83.1	84.1	91.6	104	691	1094	307	618	59.5	84.9
MAX	102	256	101	92	93	165	2300	2440	700	1150	102	110
MIN	37	106	74	76	90	82	95	429	200	110	37	63
CFSM	.22	.50	.23	.23	.25	.29	1.92	3.04	.85	1.72	.17	.24
IN.	.25	.55	.27	.27	.26	.33	2.14	3.51	.95	1.98	.19	.26

CAL YR 1974 TOTAL 101534 MEAN 278 MAX 1890 MIN 37 CFSM .77 IN 10.49
WTR YR 1975 TOTAL 106150 MEAN 291 MAX 2440 MIN 37 CFSM .81 IN 10.97

NOTE.--No gage-height record June 9 to Aug. 5.

05216860 Swan River near Calumet, Minn.

LOCATION.--Lat 47°17'20", long 93°13'54", in SW¼ sec.35, T.56 N., R.23 W., Itasca County, on left bank 1.0 mi (1.6 km) downstream from Snowball Creek, 2.1 mi (3.4 km) downstream from bridge on U.S. Highway 65 at outlet of Swan Lake and 3.1 mi (5.0 km) southeast of Calumet.

PERIOD OF RECORD.--January 1964 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,331.19 ft (405.747 m) above mean sea level, datum of 1929. Prior to June 5, 1964, reference point at same site and datum.

AVERAGE DISCHARGE.--11 years, 70.6 ft³/s (1.999 m³/s).

EXTREMES.--Current year: Maximum discharge, 631 ft³/s (17.9 m³/s) May 2 (gage height, 5.76 ft or 1.756 m); minimum daily, 16 ft³/s (0.45 m³/s) Aug. 21, 22; minimum gage height, 4.52 ft (1.378 m) Oct. 3.
Period of record: Maximum discharge, 773 ft³/s (21.9 m³/s) Apr. 15, 1969 (gage height, 5.83 ft or 1.777 m); minimum, 0.7 ft³/s (0.020 m³/s) Oct. 3, 6, 1970 (gage height, 4.23 ft or 1.290 m).

REMARKS.--Records good. Natural flow of stream affected by continually changing iron-mining activities that include diversions for iron-ore processing, storage in tailing ponds and Swan Lake, and mine pit dewatering.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	94	49	45	48	31	54	595	81	294	58	23
2	18	117	47	41	48	31	54	595	74	392	54	28
3	17	133	46	45	45	31	52	582	79	474	53	30
4	19	151	44	43	45	31	51	502	74	492	51	30
5	24	156	41	43	45	34	49	449	79	445	48	30
6	31	160	38	43	43	31	48	407	75	454	45	33
7	34	156	38	43	41	31	43	374	75	405	39	36
8	34	156	36	41	38	29	41	335	70	381	31	37
9	34	151	34	41	38	29	38	299	67	322	33	37
10	36	151	33	50	38	26	34	270	62	292	31	38
11	34	138	33	59	38	24	37	248	57	265	32	34
12	36	128	34	65	38	24	36	220	65	238	30	31
13	36	120	34	62	36	24	43	200	73	207	25	29
14	36	113	36	59	36	22	52	194	84	185	27	26
15	38	109	39	57	34	22	67	200	87	165	27	26
16	38	106	41	54	34	20	91	149	87	155	25	28
17	38	98	43	54	34	22	133	179	87	140	21	27
18	38	94	43	52	34	24	205	179	81	129	21	31
19	38	87	45	50	31	26	275	174	81	111	18	35
20	38	81	48	48	31	31	348	169	91	100	18	40
21	36	81	48	49	31	31	395	179	98	93	16	40
22	36	76	48	47	36	38	421	179	94	84	16	41
23	36	73	50	46	36	41	470	179	94	91	20	43
24	34	67	50	48	34	52	518	169	98	83	22	43
25	36	65	50	55	36	52	534	160	138	79	17	43
26	36	59	48	54	34	52	526	146	167	76	17	42
27	36	57	48	52	34	59	510	133	189	73	18	42
28	41	56	48	50	34	62	502	128	203	69	18	39
29	54	54	45	52	---	62	550	117	241	65	19	39
30	57	51	45	50	---	59	586	102	276	62	18	34
31	65	---	45	48	---	57	---	91	---	61	20	---
TOTAL	1103	3138	1327	1546	1050	1108	6763	7903	3133	6504	888	1035
MEAN	35.6	105	42.8	49.9	37.5	35.7	225	255	104	210	28.6	34.5
MAX	65	160	50	65	48	62	586	595	276	492	58	43
MIN	17	51	33	41	31	20	34	91	57	61	16	23

CAL YR 1974 TOTAL 35071 MEAN 96.1 MAX 640 MIN 17
WTR YR 1975 TOTAL 35498 MEAN 97.3 MAX 595 MIN 16

05218500 Sandy Lake at Libby, Minn.

LOCATION.--Lat 46°47'20", long 93°19'10", in sec.25, T.50 N., R.24 W., Aitkin County, on dam on Sandy River at Libby, 1.2 mi (1.9 km) upstream from mouth, and 14 mi (23 m) north of McGregor.

DRAINAGE AREA.--421 mi^3 (1,090 km^2).

PERIOD OF RECORD.--July to December 1893, October to December 1894, July 1895 to current year. Monthend contents only for some periods, published in WSP 1308. Published as Sandy Lake Reservoir at Libby October 1941 to September 1956.

GAGE.--Water-stage recorder. Datum of gage is at mean sea level, datum of 1929. Prior to Sept. 23, 1949, nonrecording gage and Sept. 24, 1949, to Nov. 28, 1962, water-stage recorder at site 1 mi (1.6 km) upstream at datum 1,207.71 ft (368.11 m) above mean sea level, adjustment of 1912. Nov. 29, 1962, to June 30, 1973, water-stage recorder at present site at datum 1,207.71 ft (368.11 m) above mean sea level, adjustment of 1912.

EXTREMES.--Current year: Maximum contents 119,400 acre-ft (147 hm^3) May 8 (elevation, 1,222.10 ft or 372.496 m); minimum, 22,950 acre-ft (28.3 hm^3) Apr. 14 (elevation, 1,212.74 ft or 369.643 m).
Period of record: Maximum contents, 167,200 acre-ft (206 hm^3) May 19, 1950 (elevation, 1,224.82 ft or 373.325 m); minimum observed, 5,950 acre-ft (7.34 hm^2) below zero of capacity table Jan. 20, 1921 (elevation, 1,207.96 ft or 368.186 m).

REMARKS.--Lake is formed by concrete dam which controls Sandy, Flowage, Snake, and Aitkin Lakes. Storage began in 1893; original timber crib dam completed in 1895, replaced by present structure in 1911. Capacity between elevation 1,214.31 ft (370.122 m) and 1,221.31 ft (372.255 m)(top of structure) is 73,330 acre-ft (90.4 hm^3), of which 37,550 acre-ft (46.3 hm^3) is controlled storage between elevations 1,214.31 ft (370.122 m) and 1,218.31 ft (371.341 m)(normal operating range). Contents shown herein are contents above elevation 1,209.03 ft (368.512 m). Water is used to benefit navigation on Mississippi River below Minneapolis.

COOPERATION.--Records furnished by Corps of Engineers.

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.30	16.13	50,860	
Oct. 31	15.14	41,990	-8,870
Nov. 30	14.97	40,510	-1,480
Dec. 31	14.85	39,460	-1,050
CAL YR 1974	-	-	-180
Jan. 31	14.45	36,120	-3,340
Feb. 28	13.92	31,850	-4,270
Mar. 31	12.96	24,530	-7,320
Apr. 30	20.95	103,700	+79,170
May 31	17.91	68,310	-35,390
June 30	16.53	54,600	-13,710
July 31	16.17	51,240	-3,360
Aug. 31	16.06	50,210	-1,030
Sept.30	16.11	50,680	+470
WTR YR 1975	-	-	-180

NOTE.--Add 1,200.00 ft to obtain elevation above mean sea level.

05219000 Sandy River at Sandy Lake Dam, at Libby, Minn.

LOCATION.--Lat 46°47'20", long 93°19'10", in sec.25, T.50 N., R.24 W., Aitkin County, at dam at outlet of Sandy Lake, at Libby, 1.2 mi (1.9 km) above mouth, and 14 mi (23 km) north of McGregor.

DRAINAGE AREA.--421 mi² (1,090 km²).

PERIOD OF RECORD.--July 1893 to March 1894, July 1894, November 1894 to March 1895, August 1895 to current year. Monthly discharge only for some periods, published in WSP 1308. Published as "below Sandy Lake Reservoir" 1893-1916.

GAGE.--Water-stage recorders on headwater and tailwater. Datum of gages is at mean sea level, datum of 1929. Prior to June 30, 1973, gages (nonrecording gages prior to June 20, 1949) at same site with datum at 1,207.71 ft (368.11 m) above mean sea level, adjustment of 1912.

AVERAGE DISCHARGE (unadjusted).--80 years (1895-1975), 216 ft³/s (6.12 m³/s), 6.97 in/yr (177 mm/yr).

EXTREMES.--Current year: Maximum daily discharge, 1,850 ft³/s (52.4 m³/s) May 15, 16; minimum daily, no flow Apr. 24-26, July 4.
Period of record: Maximum daily discharge, 3,740 ft³/s (106 m³/s) July 12, 1897; no flow at times.

REMARKS.--Discharge computed on basis of head over dam, using modified weir formula, head being obtained from headwater and tailwater recorder records. Flow completely regulated by Sandy Lake (see preceding page).

COOPERATION.--Computations of daily discharge furnished by Corps of Engineers; discharge measurement made and records reviewed by Geological Survey.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	46	99	222	126	159	126	160	200	1360	648	65	10
2	46	304	219	126	159	126	136	211	1350	624	67	10
3	47	316	222	126	156	132	136	850	1350	1220	68	10
4	47	296	79	126	156	126	104	1380	1340	0	69	10
5	46	426	78	124	156	126	104	1390	1060	378	35	10
6	46	420	75	124	156	126	104	1370	1100	504	36	10
7	46	420	74	122	153	123	104	1560	183	780	36	10
8	46	420	71	120	147	123	136	1660	213	728	37	10
9	320	408	67	120	144	118	160	1800	222	689	10	10
10	324	402	62	118	144	123	160	1760	228	663	10	10
11	309	396	72	118	144	123	100	1800	444	624	10	10
12	306	268	71	128	138	123	120	1700	438	585	10	10
13	306	272	64	132	138	117	120	1830	426	572	10	10
14	303	276	64	136	138	117	120	1780	414	572	10	10
15	303	276	64	204	138	123	120	1850	408	572	10	10
16	300	280	63	192	138	117	156	1850	402	585	10	10
17	297	284	63	180	135	114	164	1840	576	720	10	10
18	300	288	63	174	135	108	164	1810	567	720	10	10
19	202	288	67	168	135	114	216	1790	567	1010	10	10
20	206	284	71	165	135	114	204	1770	567	984	10	10
21	206	216	72	165	132	108	120	1730	720	936	10	10
22	202	219	71	165	132	108	156	1690	672	936	10	10
23	202	222	69	165	132	108	40	1660	660	704	10	10
24	153	222	134	165	132	90	0	1570	413	576	10	10
25	153	225	134	165	126	260	0	1510	427	312	10	10
26	103	231	132	165	126	480	0	1470	441	220	10	10
27	104	231	130	165	126	480	58	1390	452	224	10	10
28	103	228	132	162	126	480	103	1360	268	232	10	10
29	102	222	130	162	---	480	148	1350	268	60	10	10
30	100	219	128	159	---	312	420	1320	720	62	10	10
31	100	---	126	159	---	160	---	1320	---	63	10	---
TOTAL	5374	8718	3088	4650	3956	5485	3833	46571	18256	17503	643	300
MEAN	173	291	99.6	149	141	177	128	1502	609	565	20.7	10.0
MAX	324	426	222	204	159	480	420	1850	1360	1220	69	10
MIN	46	99	62	118	126	90	0	200	183	0	10	10
CFSM	.41	.69	.24	.35	.33	.42	.30	3.57	1.45	1.34	.05	.02
IN.	.47	.77	.27	.41	.35	.48	.34	4.12	1.61	1.55	.06	.03

CAL YR 1974 TOTAL 118045 MEAN 323 MAX 1890 MIN 11 CFSM .77 IN 10.43
WTR YR 1975 TOTAL 118337 MEAN 324 MAX 1850 MIN .00 CFSM .77 IN 10.46

05220500 Mississippi River below Sandy River, near Libby, Minn.

LOCATION.--Lat 46°47'23", long 93°19'43", in SE¼NE¼ sec.25, T.50 N., R.24 W., Aitkin County, on right bank 600 ft (183 m) downstream from Sandy River, 0.8 mi (1.3 km) northwest of Libby, and at mile 1,106 (1,780 km) upstream from Ohio River.

DRAINAGE AREA.--5,060 mi² (13,110 km²), approximately.

PERIOD OF RECORD.--April 1930 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,204.06 ft (367.00 m) above mean sea level, datum of 1929. Prior to July 28, 1931, nonrecording gage at site 600 ft (183 m) upstream at datum 3.16 ft (0.96 m) higher.

AVERAGE DISCHARGE.--45 years, 2,026 ft³/s (57.38 m³/s), 5.44 in/yr (138 mm/yr); 44 years, 1,998 ft³/s (56.58 m³/s), 5.36 in/yr (136 mm/yr); data published in WRD MINN, 1974, in error.

EXTREMES.--Current year: Maximum discharge, 8,770 ft³/s (248 m³/s) May 9, 10 (gage height, 16.18 ft or 4.932 m); minimum, 700 ft³/s (19.8 m³/s) Oct. 3 (gage height, 2.96 ft or 0.902 m).

Period of record: Maximum discharge, 16,000 ft³/s (453 m³/s) May 17, 1950 (gage height, 20.02 ft or 6.102 m); minimum, 83 ft³/s (2.35 m³/s) Nov. 16, 1936 (gage height, 1.44 ft or 0.439 m).

CORRECTIONS.--1974: Maximum discharge, 6,860 ft³/s (194 m³/s) Apr. 29 (gage height, 13.85 ft or 4.221 m); minimum, 727 ft³/s (20.6 m³/s) Sept. 22 (gage height, 3.02 ft or 0.920 m); the previously published data was in error.

REMARKS.--Records good except those for winter periods, which are fair. Flow regulated by Winnibigoshish Lake (see Sta 05201000), Leech Lake (see Sta 05206000), Pokegama Lake (see Sta 05210500), and Sandy Lake (see Sta 05218500).

REVISIONS (WATER YEARS).--WSP 1914: 1958.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	881	1630	2470	2290	2140	2290	3000	7690	5610	4490	3570	2720
2	785	2370	2450	2300	2150	2290	3000	7840	5450	4720	3480	2760
3	716	2770	2280	2300	2150	2280	3000	8090	5280	4500	3390	2800
4	720	2950	2220	2300	2160	2280	3000	8260	5040	4310	3310	2770
5	788	3030	2220	2300	2160	2280	3000	8380	4750	4330	3240	2760
6	839	3030	2220	2300	2160	2290	3000	8460	4340	4480	3190	2780
7	840	3000	2220	2300	2180	2290	2990	8570	3660	4710	3170	2830
8	804	3040	2220	2300	2200	2290	2980	8670	3420	4860	3120	2850
9	1010	3090	2230	2300	2220	2300	2970	8760	3300	5030	3040	2880
10	1260	3130	2230	2300	2240	2300	2970	8750	3290	5180	2980	2890
11	1260	3110	2230	2300	2260	2300	2970	8680	3320	5320	2940	2870
12	1230	3030	2230	2300	2280	2300	2970	8600	3370	5400	2930	2890
13	1230	2990	2240	2250	2300	2300	2980	8490	3480	5430	2920	2940
14	1250	2950	2240	2200	2300	2300	3000	8300	3590	5400	2880	2950
15	1240	2910	2240	2160	2300	2300	3010	8060	3670	5310	2830	2920
16	1260	2850	2250	2150	2300	2300	2880	7830	3760	5240	2780	2890
17	1260	2760	2260	2140	2300	2300	3070	7620	3850	5190	2720	2880
18	1170	2720	2260	2140	2300	2300	3410	7420	3810	5150	2680	2880
19	1130	2710	2250	2130	2300	2350	3850	7250	3830	5150	2650	2880
20	1150	2710	2240	2130	2300	2400	4240	7090	3930	5080	2620	2900
21	1140	2670	2240	2120	2300	2450	4510	7000	4100	5000	2620	2940
22	1130	2620	2230	2120	2300	2550	4830	6890	4150	4850	2560	2970
23	1100	2570	2220	2120	2300	2650	5530	6800	4090	4580	2560	3000
24	1070	2500	2220	2110	2300	2700	6280	6720	3930	4370	2560	3020
25	1060	2420	2220	2110	2300	2750	6910	6640	3850	4170	2620	3010
26	1020	2380	2230	2120	2300	2800	7320	6560	3720	4090	2640	2990
27	1060	2370	2240	2120	2300	2850	7540	6440	3610	4060	2640	2980
28	1100	2450	2250	2120	2300	2900	7610	6320	3530	3970	2570	2960
29	1140	2480	2260	2130	---	2950	7580	6130	3890	3830	2590	2950
30	1200	2460	2270	2130	---	3000	7630	5970	4380	3750	2620	2940
31	1250	---	2280	2140	---	3000	---	5790	---	3670	2660	---
TOTAL	33033	81700	69860	68230	63100	76640	128030	234070	119960	145620	89100	86800
MEAN	1066	2723	2254	2201	2254	2472	4268	7551	3999	4697	2874	2893
MAX	1260	3130	2470	2300	2300	3000	7630	8760	5610	5430	3570	3020
MIN	716	1630	2220	2110	2140	2280	2880	5790	3290	3670	2560	2720
CFSM	.21	.54	.45	.43	.45	.49	.84	1.49	.79	.93	.57	.57
IN.	.24	.60	.51	.50	.46	.56	.94	1.72	.88	1.07	.66	.64

CAL YR 1974 TOTAL 1052707 MEAN 2884 MAX 6860 MIN 716 CFSM .57 IN 7.74
WTR YR 1975 TOTAL 1196163 MEAN 3277 MAX 8760 MIN 716 CFSM .65 IN 8.79

05227500 Mississippi River at Aitkin, Minn.

LOCATION.--Lat 46°32'26", long 93°42'26", in W½ sec.24, T.47 N., R.27 W., Aitkin County, on right bank at upstream side of highway bridge at north edge of Aitkin, 1 mi (1.6 km) downstream from Mud River and at mile 1,055.9 (1,698.9 km) upstream from Ohio River.

DRAINAGE AREA.--6,140 mi² (15,900 km²), approximately.

PERIOD OF RECORD.--March 1945 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,182.41 ft (360.40 m) above mean sea level, datum of 1929 (levels by Corps of Engineers). Mar. 1, 1945, to Mar. 14, 1961, nonrecording gage, and Mar. 15, 1961, to Sept. 30, 1967, water-stage recorder at same site at datum 3.0 ft (0.9 m) higher. Diversion channel: Nonrecording gage. Datum of gage is 1,182.02 ft (360.28 m) above mean sea level, datum of 1929. Apr. 9, 1955, to Apr. 10, 1956, nonrecording gage at site 4 mi (6 km) downstream at different datum. Apr. 11, 1956, to Sept. 30, 1967, nonrecording gage at same site at datum 3.0 ft (0.9 m) higher.

AVERAGE DISCHARGE.--30 years, 2,980 ft³/s (84.39 m³/s), 6.59 in/yr (167 mm/yr).

EXTREMES.--Current year: Maximum daily discharge, 14,500 ft³/s (411 m³/s) May 3, 4; minimum daily, 845 ft³/s (23.9 m³/s) Oct. 5. River gage: Maximum discharge, 7,910 ft³/s (224 m³/s) May 4 (gage height, 17.91 ft or 5.459 m); minimum, 824 ft³/s (23.3 m³/s) Oct. 4, 5 (gage height, 2.64 ft or 0.805 m). Diversion gage: Maximum discharge, 6,640 ft³/s (188 m³/s) May 3 (gage height, 18.33 ft or 5.587 m); no flow Oct. 1 to Nov. 2.

Period of record: Maximum discharge, 20,000 ft³/s (566 m³/s) May 20, 1950 (gage height, 22.49 ft or 6.855 m, present datum); minimum, 151 ft³/s (4.28 m³/s) Sept. 1, 1961 (gage height, 0.60 ft or 0.183 m).

REMARKS.--Records good except those for winter periods, which are fair. Flow regulated by Winnibigoshish Lake (see sta 05201000), Leech Lake (see sta 05206000), Pokegama Lake (see sta 05210500), and Sandy Lake (see sta 05218500). Water diverted at medium and high stages into Aitkin diversion channel 6.5 mi (10.5 km) above station, bypasses station and returns to river 15.5 mi (24.9 km) below station. Diversion began Apr. 2, 1955. These records include flow in diversion channel.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	926	1580	2960	2270	2310	2380	3020	14300	7340	6370	3990	2670
2	912	1980	2960	2280	2310	2380	3030	14400	6960	8250	3850	2710
3	892	2600	2920	2300	2310	2380	3040	14500	6660	9820	3700	2790
4	868	3280	2880	2310	2320	2390	3040	14500	6400	9740	3610	2800
5	845	3560	2800	2320	2320	2400	3050	14400	6080	9300	3490	2760
6	881	3680	2790	2340	2320	2400	3060	14300	5720	8970	3390	2770
7	946	3690	2750	2340	2320	2400	3060	13800	5220	8780	3320	2840
8	987	3660	2630	2340	2320	2400	3060	13200	4560	8760	3280	2900
9	972	3670	2540	2340	2330	2400	3070	13000	4180	8740	3210	2910
10	1040	3650	2510	2340	2330	2400	3070	12700	3990	8750	3140	2940
11	1280	3660	2430	2340	2330	2410	3110	12400	3900	8780	3020	2940
12	1300	3680	2380	2320	2330	2410	3160	12000	4010	8760	2940	2900
13	1320	3610	2350	2280	2340	2410	3220	11700	4060	8710	2880	2920
14	1340	3470	2290	2260	2340	2410	3320	11400	4190	8520	2890	2950
15	1350	3360	2320	2240	2340	2410	3490	11100	4400	8260	2840	2970
16	1340	3300	2310	2270	2340	2420	3780	10700	4510	7930	2790	2970
17	1340	3260	2310	2300	2340	2430	4350	10400	4570	7490	2750	2950
18	1320	3250	2270	2320	2350	2430	5800	9970	4610	7110	2650	2950
19	1310	3250	2260	2320	2350	2450	7660	9610	4610	6800	2650	2980
20	1270	3230	2250	2300	2350	2480	8480	9310	4760	6510	2640	3020
21	1200	3160	2230	2300	2350	2520	8960	9200	4950	6210	2650	3020
22	1100	3110	2230	2280	2360	2590	9490	9020	5130	5940	2580	3040
23	1110	3020	2240	2280	2360	2660	10700	8950	5170	5630	2560	3060
24	1180	2920	2250	2280	2360	2730	11900	8860	5090	5240	2550	3100
25	1190	2810	2240	2280	2360	2800	12600	8670	4930	4980	2610	3120
26	1160	2750	2230	2280	2360	2850	13100	8520	4800	4780	2620	3140
27	1150	2760	2200	2290	2370	2910	13600	8400	4660	4690	2610	3110
28	1130	2840	2200	2300	2370	2940	14000	8280	4500	4560	2650	3080
29	1140	2930	2230	2300	---	2950	14100	8160	5080	4440	2590	3090
30	1210	2970	2240	2300	---	2970	14200	7940	5980	4220	2600	3080
31	1260	---	2240	2310	---	3000	---	7670	---	4110	2610	---
TOTAL	35269	94690	75440	71330	65490	79110	199520	341360	151020	221150	91660	88480
MEAN	1138	3156	2434	2301	2339	2552	6651	11010	5034	7134	2957	2949
MAX	1350	3690	2960	2340	2370	3000	14200	14500	7340	9820	3990	3140
MIN	845	1580	2200	2240	2310	2380	3020	7670	3900	4110	2550	2670
CFSM	.19	.51	.40	.37	.38	.42	1.08	1.79	.82	1.16	.48	.48
IN.	.21	.57	.46	.43	.40	.48	1.21	2.07	.91	1.34	.56	.54

CAL YR 1974 TOTAL 1356026 MEAN 3715 MAX 11000 MIN 824 CFSM .61 IN 8.22
WTR YR 1975 TOTAL 1516519 MEAN 4155 MAX 14500 MIN 845 CFSM .68 IN 9.18

05230500 Pine River Reservoir at Cross Lake, Minn.

LOCATION.--Lat 46°40'09", long 94°06'44", in SW¼NW¼ sec.21, T.137 N., R.27 W., Crow Wing County, at dam on Pine River, at outlet of Cross Lake at village of Cross Lake.

DRAINAGE AREA.--562 mi² (1,456 km²).

PERIOD OF RECORD.--March 1886 to current year. Monthend contents only for some periods, published in WSP 1308.

GAGE.--Water-stage recorder. Datum of gage is at mean sea level, datum of 1929 (levels by Corps of Engineers). Prior to May 3, 1949, nonrecording gage at same site and datum.

EXTREMES.--Current year: Maximum contents, 101,500 acre-ft (125 hm³) May 5 (elevation, 1,229.55 ft or 374.767 m); minimum, 62,920 acre-ft (77.6 hm³) Apr. 13 (elevation, 1,226.64 ft or 373.880 m).
Period of record: Maximum contents observed, 173,600 acre-ft (214 hm³) July 10, 1916 (elevation, 1,234.56 ft or 376.294 m); minimum observed, 1,310 acre-ft (1.62 hm³) below zero of capacity table Aug. 20, 1918 (elevation, 1,217.67 ft or 371.146 m).

REMARKS.--Reservoir is formed by Trout, Whitefish, Rush, and Cross Lakes and several other natural lakes controlled by timber crib dams; storage began in 1886; dam completed in 1886. Capacity between elevations 1,226.32 ft (373.782 m) and 1,234.82 ft (376.373 m)(maximum allowable range) is 118,710 acre-ft (146 hm³) of which 53,280 acre-ft (65.7 hm³) is controlled storage between elevations 1,226.32 ft (373.782 m) and 1,230.32 ft (375.002 m)(normal operating range). Contents shown herein are contents above an elevation 1,218.67 ft (371.451 m). Water is used to benefit navigation on Mississippi River below Minneapolis.

COOPERATION.--Records furnished by Corps of Engineers.

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.30	29.38	99,160	-
Oct. 31	28.58	88,350	-10,810
Nov. 30	27.92	79,580	-8,770
Dec. 31	27.89	79,180	-400
CAL YR 1974	-	-	-530
Jan. 31	27.72	76,940	-2,240
Feb. 28	27.15	69,500	-7,440
Mar. 31	26.81	65,090	-4,410
Apr. 30	29.13	95,760	+30,670
May 31	29.18	96,430	+670
June 30	29.18	96,430	0
July 31	29.30	98,070	+1.640
Aug. 31	29.41	99,570	+1,500
Sept.30	29.29	97,930	-1,640
WTR YR 1975	-	-	-1,230

NOTE.--Add 1,200.00 ft to obtain elevation above mean sea level.

05231000 Pine River at Cross Lake Dam, at Cross Lake, Minn.

LOCATION.--Lat 45°40'09", long 94°06'44", in SW¼NW¼ sec.21, T.137 N., R.27 W., Crow Wing County, at dam at outlet of Cross Lake at Village of Cross Lake.

DRAINAGE AREA.--562 mi² (1,456 km²).

PERIOD OF RECORD.--April 1886 to current year. Monthly discharge only for some periods, published in WSP 1308. Published as "below Pine River Reservoir" 1895-1916, 1929, and as "at Pine River Dam, at Cross Lake" 1941-56.

GAGE.--Water-stage recorder, headwater gage, and nonrecording tailwater gage. Datum of gages is 1,216.32 ft (370.73 m) above mean sea level, datum of 1929. Mar. 26, 1886, to May 31, 1929, nonrecording gages on headwater and tailwater at same sites and datum. June 1 to Nov. 30, 1929, nonrecording gage in tailwater at datum 1.60 ft (0.49 m) lower. Dec. 1, 1929, to May 2, 1949, nonrecording gage on headwater and Dec. 1, 1929, to August 1949, nonrecording gage on tailwater at present sites and datum.

AVERAGE DISCHARGE (unadjusted).--89 years, 218 ft³/s (6.17 m³/s), 5.27 in/yr (134 mm/yr).

EXTREMES.--Current year: Maximum daily discharge, 1,410 ft³/s (39.9 m³/s) May 7; minimum daily, 25 ft³/s (0.71 m³/s) Aug. 10-23, 26-30, Sept. 4, 5.

Period of record: Maximum daily discharge, 2,250 ft³/s (63.7 m³/s) in June 1896 (does not include flow bypassing dam through crevasse); no flow at times.

REMARKS.--Discharge computed principally on basis of modified weir formula, the head being obtained from twice-daily readings on tailwater gage and from headwater recorder. Flow completely regulated by Pine River Reservoir (see preceding page).

COOPERATION.--Computations of daily discharge furnished by Corps of Engineers; records reviewed by Geological Survey.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	50	550	290	200	355	355	355	400	600	950	50	125
2	50	533	290	200	355	355	355	583	600	950	50	125
3	50	550	290	200	355	355	355	800	413	1000	50	54
4	50	550	290	200	355	355	355	800	350	826	50	25
5	50	550	290	200	355	355	355	800	350	810	50	25
6	50	550	290	200	355	355	355	970	350	1000	50	101
7	50	550	208	246	355	355	355	1410	350	1200	50	125
8	50	550	200	250	355	355	355	1300	350	1200	50	125
9	50	550	200	250	355	355	355	1300	350	1010	28	125
10	383	550	200	250	355	355	355	1300	121	1000	25	125
11	450	550	200	285	355	355	355	1300	121	790	25	125
12	450	550	200	300	355	355	355	1300	100	790	25	125
13	450	550	200	300	355	355	355	1000	100	605	25	125
14	450	550	200	348	355	355	355	800	100	605	25	125
15	450	550	200	355	355	355	355	800	100	450	25	125
16	450	413	200	355	355	355	355	800	100	450	25	125
17	450	400	200	355	355	355	355	467	100	450	25	125
18	450	400	200	355	355	355	355	400	400	450	25	125
19	450	400	200	355	355	355	355	400	400	312	25	125
20	450	400	200	355	355	355	355	581	400	300	25	125
21	450	400	200	355	355	355	355	600	583	300	25	125
22	450	400	200	355	355	355	355	600	600	150	25	125
23	450	299	200	355	355	355	305	600	600	150	25	125
24	287	290	200	355	355	355	300	600	600	150	120	125
25	280	290	200	355	355	355	300	600	600	150	160	125
26	300	290	200	355	355	355	300	600	600	83	25	125
27	346	290	200	355	355	355	300	696	600	50	25	125
28	350	290	200	355	355	355	300	700	600	50	25	125
29	350	290	200	355	---	355	300	700	600	50	25	125
30	350	290	200	355	---	355	355	604	1000	50	25	125
31	350	---	200	355	---	355	---	600	---	50	121	---
TOTAL	9296	13175	6748	9464	9940	11005	10270	24371	12138	16381	1304	3455
MEAN	300	439	218	305	355	355	342	786	405	528	42.1	115
MAX	450	550	290	355	355	355	355	1410	1000	1200	160	125
MIN	50	290	200	200	355	355	300	400	100	50	25	25
CFSM	.53	.78	.39	.54	.63	.63	.61	1.40	.72	.94	.07	.20
IN.	.62	.87	.45	.63	.66	.73	.68	1.61	.80	1.08	.09	.23

CAL YR 1974 TOTAL 113976 MEAN 312 MAX 950 MIN 50 CFSM .56 IN 7.54
WTR YR 1975 TOTAL 127547 MEAN 349 MAX 1410 MIN 25 CFSM .62 IN 8.44

05244000 Crow Wing River at Nimrod, Minn.

LOCATION.--Lat 46°38'25", long 94°52'44", in SE¼NW¼ sec.32, T.137 N., R.33 W., Wadena County, on right bank 200 ft (61 m) upstream from highway bridge, 0.2 mi (0.3 km) north of Nimrod, and 0.7 mi (1.1 km) upstream from Cat River.

DRAINAGE AREA.--1,010 mi² (2,620 km²), approximately.

PERIOD OF RECORD.--April 1910 to September 1914, July 1930 to current year (winter records incomplete prior to 1940).

GAGE.--Water-stage recorder. Datum of gage is 1,313.27 ft (400.285 m) above mean sea level, datum of 1929 (levels by Wadena County Highway Department from Minnesota Highway Department bench mark). Apr. 15, 1910, to Sept. 30, 1914, nonrecording gage at same site, at datum 2.2 ft (0.671 m) lower. July 28, 1930, to Nov. 4, 1949, nonrecording gages at same site and datum.

AVERAGE DISCHARGE.--36 years (1939-75), 486 ft³/s (13.76 m³/s) 6.53 in/yr (166 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,020 ft³/s (57.2 m³/s) Apr. 25 (gage height, 5.12 ft or 1.561 m); maximum gage height, 7.12 ft (2.170 m) Apr. 19 (backwater from ice); minimum discharge, 248 ft³/s (7.02 m³/s) Aug. 14, 15; minimum gage height, 2.71 ft (0.826 m) Nov. 25.

Period of record: Maximum discharge, 3,700 ft³/s (105 m³/s) Oct. 10, 1973 (gage height, 7.35 ft or 2.240 m); maximum gage height, 7.64 ft (2.329 m) Apr. 20, 1950 (backwater from ice); minimum discharge observed, 45 ft³/s (1.27 m³/s) Aug. 7, 1936.

REMARKS.--Records good except those for winter period, which are fair. Flow affected by natural storage in many lakes.

REVISIONS (WATER YEARS).--WSP 1508: 1910-11, 1913-14, 1937, 1942(M), 1944(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	345	505	380	345	335	360	380	1840	746	1040	323	297
2	339	566	380	345	335	360	380	1780	720	995	341	296
3	347	574	380	345	335	360	380	1720	688	993	343	315
4	347	565	380	345	340	360	385	1650	675	993	336	331
5	363	562	385	340	340	360	385	1590	682	998	331	357
6	379	565	405	340	340	360	385	1520	662	1060	324	366
7	401	576	410	340	340	365	390	1450	642	1030	315	375
8	421	599	405	340	345	370	390	1410	618	1010	300	372
9	430	605	400	340	345	370	390	1350	611	972	288	366
10	426	605	400	340	345	370	400	1310	622	926	282	364
11	412	593	400	340	345	370	410	1260	618	873	271	360
12	397	579	395	335	350	370	430	1210	627	819	260	352
13	393	564	390	335	350	370	475	1170	622	762	260	352
14	396	551	385	335	350	370	540	1140	606	710	254	344
15	395	484	380	335	350	370	610	1150	605	661	253	327
16	396	485	380	335	350	370	730	1100	557	619	263	325
17	391	550	375	330	350	370	860	1060	680	577	256	322
18	390	560	370	330	350	370	1000	1040	846	545	252	362
19	389	503	365	330	350	375	1200	1010	871	521	260	391
20	386	468	360	330	350	380	1380	994	1050	504	272	421
21	383	439	360	330	355	380	1600	1010	1060	485	337	431
22	376	438	360	330	355	380	1700	1000	965	464	291	433
23	373	407	355	330	355	380	1900	994	884	493	304	422
24	372	417	355	330	355	375	1980	968	838	479	302	421
25	367	384	355	330	360	375	2000	942	811	457	292	418
26	363	313	350	330	360	375	1930	928	804	436	306	407
27	362	310	350	330	360	375	1880	896	855	403	311	403
28	369	315	350	330	360	375	1850	876	835	371	313	399
29	376	330	350	330	---	375	1860	850	927	352	309	402
30	380	355	350	330	---	375	1880	824	1020	344	317	396
31	398	---	350	335	---	375	---	786	---	328	312	---
TOTAL	11862	14727	11610	10390	9755	11490	30080	36628	22747	21220	9178	11127
MEAN	383	491	375	335	348	371	1003	1188	758	685	296	371
MAX	430	605	410	345	360	380	2000	1840	1060	1060	343	433
MIN	339	310	350	330	335	360	380	786	557	328	252	296
CFSM	.38	.49	.37	.33	.34	.37	.99	1.18	.75	.68	.29	.37
IN.	.44	.54	.43	.38	.36	.42	1.11	1.36	.84	.78	.34	.41

CAL YR 1974 TOTAL 211143 MEAN 578 MAX 1900 MIN 285 CFSM .57 IN 7.78
WTR YR 1975 TOTAL 201016 MEAN 551 MAX 2000 MIN 252 CFSM .55 IN .00

05245100 Long Prairie River at Long Prairie, Minn.

LOCATION.--Lat 45°58'30", long 94°51'56", in NE¼NW¼ sec.20, T.129 N., R.33 W., Todd County, on right bank 90 ft (27 m) upstream from bridge on First Avenue at Long Prairie and 400 ft (122 m) downstream from Venewitz Creek.

PERIOD OF RECORD.--October 1971 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,281.74 ft (390.674 m) above mean sea level, datum of 1929.

EXTREMES.--Current year: Maximum discharge, 1,200 ft^3/s (34.0 m^3/s) Apr. 22 (gage height, 6.25 ft or 1.905 m); minimum daily, 5.4 ft^3/s (0.15 m^3/s) Jan. 13 to Feb. 19.
Period of record: Maximum discharge, 3,270 ft^3/s (92.6 m^3/s) July 22, 1972 (gage height, 9.37 ft or 2.856 m); minimum daily, 5.4 ft^3/s (0.15 m^3/s) Jan. 13 to Feb. 19, 1975.

REMARKS.--Records good except those for winter periods, which are fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	60	25	23	5,4	31	38	738	170	443	117	83
2	26	55	25	23	5,4	31	38	696	158	449	116	84
3	26	52	25	22	5,4	31	38	682	156	423	114	98
4	26	55	25	22	5,4	31	38	633	169	393	108	92
5	30	57	25	22	5,4	32	38	580	186	383	104	92
6	31	55	25	22	5,4	32	39	522	184	413	99	92
7	31	50	25	22	5,4	32	40	485	177	427	96	95
8	31	48	25	22	5,4	32	42	458	166	423	93	92
9	30	46	25	20	5,4	32	44	435	164	405	90	89
10	30	44	25	12	5,4	32	47	415	173	379	87	89
11	29	42	25	6,1	5,4	32	50	391	177	350	83	88
12	28	43	25	5,5	5,4	32	60	369	193	326	80	86
13	28	39	25	5,4	5,4	32	72	346	186	300	79	84
14	28	27	25	5,4	5,4	33	89	331	192	274	76	82
15	25	35	25	5,4	5,4	33	120	312	255	244	75	81
16	28	35	25	5,4	5,4	33	187	295	245	213	75	80
17	28	35	25	5,4	5,4	34	300	282	252	186	73	77
18	28	35	25	5,4	5,4	34	641	258	316	170	71	79
19	28	34	25	5,4	5,4	34	820	245	301	157	72	80
20	29	33	25	5,4	5,5	34	984	237	328	146	79	79
21	29	30	25	5,4	6,1	35	1110	257	385	140	77	75
22	30	30	25	5,4	7,0	35	1180	251	435	136	74	73
23	31	40	25	5,4	8,2	35	1150	247	468	144	74	72
24	33	29	25	5,4	11	35	1110	241	485	139	74	72
25	32	28	24	5,4	15	36	1100	236	478	134	75	70
26	32	27	24	5,4	20	36	1000	230	460	130	74	69
27	32	27	24	5,4	26	36	904	218	435	130	74	69
28	33	26	24	5,4	31	36	852	206	389	128	80	68
29	33	25	23	5,4	---	37	820	192	371	125	82	66
30	36	25	23	5,4	---	37	776	178	377	123	82	65
31	39	---	23	5,4	---	38	---	170	---	120	83	---
TOTAL	927	1167	765	324,2	232,4	1043	13727	11136	8429	7955	2636	2421
MEAN	29,9	38,9	24,7	10,5	8,30	33,6	458	359	281	257	85,0	80,7
MAX	39	60	25	23	31	38	1180	738	485	449	117	98
MIN	25	25	23	5,4	5,4	31	38	170	156	120	71	65
AC-FT	1840	2310	1520	643	461	2070	27230	22090	16720	15780	5230	4800

CAL YR 1974 TOTAL 35556,0 MEAN 97,4 MAX 792 MIN 23 AC-FT 70530
WTR YR 1975 TOTAL 50762,6 MEAN 139 MAX 1180 MIN 5,4 AC-FT 100700

05246500 Gull Lake near Brainerd, Minn.

LOCATION.--Lat 46°24'40", long 94°21'26", in N½ sec.20, T.134 N., R.29 W., Cass County, in pool of dam on Gull River, 800 ft (244 m) south of outlet of Gull Lake, 0.2 mi (0.3 km) upstream from Gull Lake Dam, and 8 mi (13 km) northwest of Brainerd.

DRAINAGE AREA.--287 mi^2 (743 km^2).

PERIOD OF RECORD.--August 1911 to current year. Prior to October 1941 monthend contents only, published in WSP 1308. Published as Gull Lake Reservoir October 1941 to September 1956.

GAGE.--Water-stage recorder. Datum of gage is at mean sea level, datum of 1929. Prior to Aug. 10, 1949, nonrecording gage 800 ft (244 m) north of present site at same datum. Aug. 11, 1949 to June 30, 1973, water-stage recorder at present site and at datum 1,188.14 ft (362.15 m) above mean sea level, adjustment of 1912.

EXTREMES.--Current year: Maximum contents, 64,280 acre-ft (79.3 hm^3) July 3 (elevation, 1,194.25 ft or 364.007 m); minimum, 41,530 acre-ft (51.2 hm^3) Apr. 15 (elevation, 1,192.46 ft or 363.462 m).

Period of record: Maximum contents, 74,800 acre-ft (92.2 hm^3) June 30, 1914 (elevation, 1,195.05 ft or 364.251 m); minimum observed, 22,250 acre-ft (27.4 hm^3) Mar. 20, 1924 (elevation, 1,190.75 ft or 362.941 m).

REMARKS.--Reservoir is formed by Gull Lake and several other natural lakes controlled by concrete dam completed in 1913; storage began in 1912. Capacity between elevation 1,192.75 ft (363.550 m) and 1,195.75 ft (364.464 m)(maximum allowable range and normal operating range) is 26,020 acre-ft (32.1 hm^3). Contents shown herein are contents above elevation 1,188.75 ft (362.331 m). Water is used to benefit navigation on Mississippi River below Minneapolis.

COOPERATION.--Records furnished by Corps of Engineers.

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.30	93.62	56,060	-
Oct. 31	92.94	47,280	-8,780
Nov. 30	92.98	47,790	+510
Dec. 31	93.00	48,050	+260
CAL YR 1974	-	-	-4,020
Jan. 31	92.70	44,240	-3,810
Feb. 28	92.65	43,680	-560
Mar. 31	92.74	44,690	+1,010
Apr. 30	94.09	62,190	+17,500
May 31	93.85	59,070	-3,120
June 30	94.13	62,710	+3,640
July 31	93.90	59,710	-3,000
Aug. 31	93.90	59,710	0
Sept.30	93.90	59,710	0
WTR YR 1975	-	-	-3,650

NOTE.--Add 1,100.00 ft to obtain elevation above mean sea level.

05247000 Gull River at Gull Lake Dam, near Brainerd, Minn.

LOCATION.--Lat 46°24'40", long 94°21'12", in sec.20, T.134 N., R.29 W., Cass County, in headwater and tailwater of dam at outlet of Gull Lake, 8 mi (13 km) northwest of Brainerd.

DRAINAGE AREA.--287 mi² (743 km²).

PERIOD OF RECORD.--August 1911 to current year. Monthly discharge only for some periods, published in WSP 1308. Published as "at Gull Lake Reservoir" 1929.

GAGE.--Water-stage recorder on headwater and nonrecording gage on tailwater. Datum of gages is at mean sea level, datum of 1929. August 1911 to May 23, 1929, and Dec. 1, 1929, to Aug. 1, 1949, both gages were nonrecording gages at same site and datum in use. May 24 to Nov. 30, 1929, nonrecording gage 500 ft (152 m) downstream at different datum. Aug. 2, 1949, to June 30, 1973, at present sites with datum of gage at 1,188.14 ft (362.15 m) above mean sea level, adjustment of 1912.

AVERAGE DISCHARGE (unadjusted).--64 years, 109 ft³/s (3.09 m³/s), 5.16 in/yr (131 mm/yr).

EXTREMES.--Current year: Maximum daily discharge, 630 ft³/s (17.8 m³/s) May 4, 5; minimum daily, 18 ft³/s 0.51 m³/s) Aug. 7 to Sept. 2.
Period of record: Maximum daily discharge, 1,120 ft³/s (31.7 m³/s) May 15, 1938; no flow at times.

REMARKS.--Discharge computed at dam on basis of modified weir formulas, the head being obtained from twice-daily readings on tailwater gage and from headwater recorder. Flow completely regulated by Gull Lake (see preceding page).

COOPERATION.--Computations of daily discharge furnished by Corps of Engineers; records reviewed by Geological Survey.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31	149	144	77	172	113	228	567	245	550	45	18
2	31	150	144	77	165	113	228	567	245	550	45	18
3	30	155	144	78	165	113	228	567	39	560	45	19
4	30	155	141	78	113	113	228	630	39	560	43	19
5	30	203	141	78	113	113	222	630	39	560	42	19
6	31	203	141	78	113	113	222	567	39	540	41	19
7	31	203	90	150	113	113	222	558	39	540	18	19
8	31	203	90	150	113	113	222	543	39	540	18	19
9	31	203	89	150	113	113	222	543	39	450	18	19
10	225	203	87	150	113	113	216	410	39	179	18	19
11	207	203	87	198	113	113	216	410	39	179	18	19
12	207	203	77	176	113	113	216	410	39	179	18	19
13	208	203	77	180	113	113	210	410	39	179	18	19
14	207	203	77	252	113	113	210	410	93	179	18	19
15	202	203	77	259	113	113	210	208	93	179	18	19
16	202	194	77	259	113	113	210	208	156	179	18	19
17	202	193	77	259	113	113	216	204	156	175	18	19
18	202	193	77	252	113	113	222	208	156	175	18	19
19	202	193	77	252	113	113	228	208	250	42	18	19
20	198	193	77	248	113	113	240	124	250	46	18	19
21	198	191	77	252	113	113	246	124	410	46	18	19
22	198	191	77	252	113	113	258	124	410	46	18	19
23	194	144	77	260	113	113	264	124	410	46	18	19
24	194	144	77	248	113	98	390	260	400	47	18	19
25	195	144	77	252	113	113	472	255	400	46	18	19
26	150	144	77	252	113	115	540	255	400	46	18	19
27	149	144	77	248	113	117	558	255	400	46	18	19
28	149	123	77	245	113	117	549	255	293	46	18	19
29	149	144	77	189	---	234	558	255	299	45	18	19
30	149	144	77	189	---	234	558	255	410	45	18	19
31	149	---	77	189	---	234	---	255	---	45	18	---
TOTAL	4410	5321	2838	5977	3327	3861	8809	10799	5905	7045	711	568
MEAN	142	177	91.5	193	119	125	294	348	197	227	22.9	18.9
MAX	225	203	144	260	172	234	558	630	410	560	45	19
MIN	30	123	77	77	113	98	210	124	39	42	18	18
CFSM	.49	.62	.32	.67	.41	.44	1.02	1.21	.69	.79	.08	.07
IN.	.57	.69	.37	.77	.43	.50	1.14	1.40	.77	.91	.09	.07

CAL YR 1974 TOTAL 61789 MEAN 169 MAX 561 MIN 21 CFSM .59 IN 8.01
WTR YR 1975 TOTAL 59571 MEAN 163 MAX 630 MIN 18 CFSM .57 IN 7.72

05247500 Crow Wing River near Pillager, Minn.

LOCATION.--Lat 46°18'18", long 94°22'38", in SW¼NE¼ sec.30, T.133 N., R.29 W., Cass County, at Sylvan dam powerplant of Minnesota Power & Light Co., 3.6 mi (5.8 km) above mouth and 4.9 mi (7.9 km) southeast of Pillager.

PERIOD OF RECORD.--October 1968 to current year. Records for August 1924 to September 1968 available in files of the Minnesota district office.

AVERAGE DISCHARGE.- -7 years, 1,597 ft^3/s (45.2 m^3/s).

EXTREMES.--Current year: Maximum daily discharge, 10,800 ft^3/s (306 m^3/s) Apr. 21; minimum daily, 300 ft^3/s (8.50 m^3/s) Jan. 12.

Period of record: Maximum daily discharge, 16,600 ft^3/s (470 m^3/s) Apr. 12, 13, 1969; minimum daily, 152 ft^3/s (4.30 m^3/s) Sept. 21, 1970.

Maximum daily discharge since 1924, 18,300 ft^3/s (518 m^3/s) Apr. 14, 1965.

REMARKS.--Records fair except those below 1,000 ft^3/s (28.3 m^3/s), which are poor. Discharge computed on basis of powerplant records. Flow partly regulated by powerplants and Gull Lake (see p. 129).

COOPERATION.--Records collected by Minnesota Power & Light Co. under general supervision of Geological Survey, in connection with a Federal Power Commission project.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	580	1150	839	623	640	618	881	8050	1760	4040	688	554
2	510	1250	758	623	656	651	923	7550	1520	4480	636	481
3	535	1400	658	577	637	628	928	7360	1560	4170	666	499
4	517	1490	874	587	624	589	1010	6930	1350	4060	646	467
5	588	1380	810	589	624	621	885	6270	1390	4000	485	655
6	667	1330	826	554	606	594	944	5940	1300	3970	577	527
7	684	1380	589	562	592	645	931	5570	1320	3620	572	606
8	625	1180	577	618	626	614	985	5300	1240	3540	527	593
9	724	1250	553	657	585	580	942	4960	1140	3200	525	571
10	724	1140	490	680	653	660	942	4850	1220	2870	546	624
11	810	1000	577	507	700	581	955	4500	1250	2560	478	530
12	945	1110	667	300	567	657	1060	4030	1310	2420	586	560
13	868	1160	622	546	595	631	1250	3940	1140	2050	518	546
14	936	965	657	624	624	638	1470	3740	1320	1900	529	549
15	693	926	698	563	568	638	1440	3540	1590	1870	569	512
16	782	927	645	598	531	652	2000	3250	1620	1780	563	480
17	978	807	650	816	602	643	3100	3180	1640	1640	468	554
18	835	1000	672	686	593	652	4720	2520	1740	1380	555	675
19	811	1300	675	600	631	749	6410	2420	2400	1480	427	801
20	696	1120	631	782	629	1030	10500	2620	2900	1360	596	530
21	802	816	658	722	650	1010	10800	2520	2460	1260	586	740
22	890	1080	609	704	609	1360	10200	2310	3200	1120	559	744
23	664	958	636	692	625	1050	10200	2350	3170	1230	634	715
24	856	868	680	669	604	512	9700	2380	3100	965	528	654
25	668	615	624	842	682	567	9600	2380	2880	1060	537	724
26	702	363	582	754	583	709	9410	2210	2780	1040	699	598
27	642	569	698	738	707	661	8950	2120	2710	925	544	619
28	866	582	539	669	553	704	8690	1960	2720	896	669	573
29	718	647	615	737	---	763	8400	2030	3100	867	642	567
30	759	813	616	735	---	799	8210	1910	3570	710	527	654
31	875	---	630	648	---	835	---	1780	---	696	545	---
TOTAL	22950	30576	20355	20002	17296	22041	136376	120450	60900	67159	17675	17888
MEAN	740	1019	657	645	618	711	4546	3885	2030	2166	570	596
MAX	978	1490	874	842	707	1360	10800	8050	3570	4480	699	801
MIN	510	363	490	300	531	512	881	1780	1140	696	427	467

CAL YR 1974 TOTAL 521968 MEAN 1430 MAX 12200 MIN 363
WTR YR 1975 TOTAL 553668 MEAN 1517 MAX 10800 MIN 300

05267000 Mississippi River near Royalton, Minn.

LOCATION.--Lat 45°51'40", long 94°21'30", in lot 2, sec.20, T.39 N., R.32 W., Morrison County, at plant of Minnesota Power & Light Co., 4 mi (6.4 km) northwest of Royalton, 4.5 mi (7.2 km) downstream from Swan River, and at mile 956 (1,538 km) upstream from Ohio River.

DRAINAGE AREA.--11,600 mi² (30,000 km²), approximately.

PERIOD OF RECORD.--March 1924 to current year.

AVERAGE DISCHARGE.--51 years, 4,426 ft³/s (125 m³/s), 5.18 in/yr (132 mm/yr).

EXTREMES.--Current year: Maximum daily discharge, 30,700 ft³/s (869 m³/s) Apr. 29, 30; minimum daily, 1,690 ft³/s (47.9 m³/s) Oct. 2.
Period of record: Maximum daily discharge, 37,700 ft³/s (1,070 m³/s) Apr. 16, 1965; minimum daily, 254 ft³/s (7.19 m³/s) Nov. 25, 1936.

REMARKS.--Records good. Discharge computed on basis of powerplant records. Flow partly regulated by powerplants and Winnibigoshish, Leech, Pokegama, Sandy, and Gull Lakes and by Pine River Reservoir (see p. 113, 115, 117, 121, 129, 125).

COOPERATION.--Records collected by Minnesota Power & Light Co. under general supervision of Geological Survey, in connection with a Federal Power Commission project.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1820	3080	4210	3580	4010	4040	4850	30600	11900	13500	5950	3850
2	1690	4420	4180	3580	4010	3860	5210	30600	11000	14400	5680	3780
3	1700	4850	4010	3560	4010	3830	5210	30000	10700	16200	5300	3770
4	1730	5380	3560	3580	4010	3920	5210	29700	10400	16700	4960	4160
5	2000	6240	3950	3580	4010	4030	5210	29400	9780	18500	4800	4020
6	2010	6420	4210	3790	4010	3780	5210	27700	8970	19000	5000	3700
7	1880	6950	4230	3820	4010	3780	5210	27600	8620	18300	4600	4200
8	2130	6450	3260	3750	4010	3830	5210	27000	7840	17200	4760	4150
9	1930	6730	2490	4010	4010	3830	5210	26100	7480	16800	4470	4140
10	1960	6580	3110	4010	4010	3740	5210	25200	7090	16300	4710	4260
11	1990	6580	3630	3620	4010	4010	5210	24800	6510	15400	4710	4140
12	2600	6240	3750	2950	4010	4010	5210	24100	6670	15000	4600	4170
13	3190	6180	3830	3300	4010	4010	5370	23100	6660	14900	4410	3800
14	3080	5990	3430	3700	4010	3900	5690	21900	6660	14300	4230	4030
15	3000	5770	3580	3790	4010	3630	6870	21100	7260	13700	4230	3930
16	2740	5770	3580	3560	4010	3600	7100	19900	7550	13100	3860	4170
17	2780	5650	3380	3580	4010	3850	9100	18900	7520	12200	4110	4030
18	3110	5580	3110	3580	4010	3630	13500	18500	8190	11500	4030	4100
19	3110	5650	3830	3580	4010	4070	16700	17600	8300	10900	3620	4390
20	3110	6020	4010	3560	4010	4180	21400	16200	9370	10400	3760	4470
21	3110	5770	3580	3710	4010	6300	24300	13700	10200	9970	3800	3900
22	3110	5590	3340	4010	4010	5670	28300	14800	10900	9220	4050	4160
23	2950	5440	3110	3840	4010	4820	28200	14900	11300	9020	3850	4250
24	3090	5470	3110	4140	4010	3690	28400	15100	11200	8810	3720	4230
25	3080	4280	3110	4010	4010	3100	29500	14700	10900	7890	3900	4000
26	2710	3690	3110	4010	4010	4000	29800	14600	10800	7220	4160	4160
27	2580	3380	3580	4010	4010	4650	29900	14000	10300	7080	3930	4230
28	2660	3250	3580	4010	4010	4710	30800	13200	10000	7120	4060	4170
29	3080	3480	3580	4010	---	4710	30700	12900	10400	7070	4030	4230
30	2580	3190	3580	4010	---	4710	30700	12800	12400	7000	3670	4160
31	3160	---	3580	4010	---	4710	---	12400	---	6360	3440	---
TOTAL	79639	160880	110530	116310	112280	128610	438790	643100	276870	385060	134580	122690
MEAN	2569	5363	3565	3752	4010	4149	14630	20750	9229	12420	4341	4090
MAX	3190	6950	4210	4140	4010	6300	30700	30600	12400	19000	5950	4470
MIN	1690	3080	2490	2950	4010	3100	4850	12400	6510	6360	3440	3700
CFSM	.22	.46	.31	.32	.35	.36	1.26	1.79	.80	1.07	.37	.35
IN.	.26	.52	.35	.37	.36	.41	1.41	2.06	.89	1.23	.43	.39

CAL YR 1974 TOTAL 2331670 MEAN 6388 MAX 21400 MIN 1650 CFSM .55 IN 7.48
WTR YR 1975 TOTAL 2709330 MEAN 7423 MAX 30700 MIN 1690 CFSM .64 IN 8.69

05270500 Sauk River near St. Cloud, Minn.

LOCATION.--Lat 45°33'35", long 94°14'00", in SE¼SW¼ sec.8, T.124 N., R.28 W., Stearns County, on right bank 0.5 mi (0.8 km) northwest of Waite Park, 3 mi (4.8 km) west of St. Cloud, and 5 mi (8.0 km) upstream from mouth.

DRAINAGE AREA.--925 mi² (2,396 km²).

PERIOD OF RECORD.--July 1909 to December 1912, April to December 1913, May to November 1929, March 1930 to September 1931, April to November 1932, March to November 1933, March 1934 to current year. Monthly discharge only for some periods, published in WSP 1308.

GAGE.--Water-stage recorder. Datum of gage is 1,034.63 ft (315.36 m) above mean sea level, datum of 1929. Prior to Nov. 22, 1934, nonrecording gage on highway bridge 1 mi (1.6 km) downstream at datum 6.77 ft (2.06 m) lower.

AVERAGE DISCHARGE.--45 years (1909-12, 1930-31, 1934-75), 271 ft³/s (7.67 m³/s), 3.98 in/yr (101 mm/yr)

EXTREMES.--Current year: Maximum discharge, 3,410 ft³/s (96.6 m³/s) Apr. 29 (gage height, 6.77 ft or 2.063 m); minimum, 62 ft³/s (1.76 m³/s) Oct. 18, 19 (gage height, 0.92 ft or 0.280 m).
Period of record: Maximum discharge, 9,100 ft³/s (258 m³/s) Apr. 13, 1965 (gage height, 10.68 ft or 3.255 m); minimum, 0.3 ft³/s (0.008 m³/s) Nov. 25, 1936.

REMARKS.--Records good except those for winter periods, which are fair. Flow regulated by powerplants and reservoirs above station.

REVISIONS (WATER YEARS).--WSP 895: Drainage area. WSP 1308: 1912(M), 1932(M). WSP 1508: 1937(m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	75	140	115	84	80	118	166	3230	807	1300	260	276
2	73	140	112	84	81	119	171	3050	785	1170	257	254
3	73	137	110	83	82	120	178	2860	753	1040	247	250
4	73	140	108	82	82	120	185	2630	713	950	238	244
5	75	135	105	81	83	120	195	2380	690	905	145	232
6	77	145	101	80	84	121	203	2180	636	870	122	226
7	80	145	98	79	86	121	210	2050	576	821	122	232
8	73	145	96	79	87	121	225	1980	540	771	122	217
9	71	148	96	79	89	122	238	1920	512	726	125	203
10	71	145	97	78	90	125	250	1840	512	686	122	197
11	71	148	95	77	92	126	265	1750	512	650	120	206
12	75	153	95	77	94	127	280	1660	556	614	118	197
13	73	142	95	77	95	128	303	1590	548	584	115	189
14	71	142	95	76	96	129	325	1530	540	560	113	183
15	71	161	94	76	97	129	350	1440	636	532	113	180
16	69	130	94	76	99	130	396	1340	636	508	118	172
17	69	135	93	75	101	130	440	1280	636	480	115	166
18	67	113	93	75	102	131	508	1210	641	452	115	189
19	67	113	93	75	103	133	654	1150	614	407	115	208
20	67	118	92	75	105	136	930	1080	623	393	194	197
21	67	120	92	75	106	138	1310	1030	722	372	178	189
22	71	108	91	75	109	139	1780	995	785	354	178	183
23	67	108	90	76	110	140	2230	1090	794	351	247	178
24	69	111	90	77	112	143	2610	1040	825	344	257	166
25	73	115	89	77	113	145	2780	1000	857	324	289	166
26	73	116	88	78	114	148	2810	1030	915	311	289	164
27	73	117	88	78	116	149	2860	965	970	302	270	158
28	75	115	87	79	118	151	3160	905	955	295	292	158
29	80	116	86	79	---	157	3360	852	960	282	295	155
30	88	116	86	80	---	160	3360	852	980	270	286	153
31	95	---	84	80	---	163	---	834	---	263	279	---
TOTAL	2272	3917	2948	2422	2726	4139	32732	48743	21229	17887	5856	5888
MEAN	73.3	131	95.1	78.1	97.4	134	1091	1572	708	577	189	196
MAX	95	161	115	84	118	163	3360	3230	980	1300	295	276
MIN	67	108	84	75	80	118	166	834	512	263	113	153
CFSM	.08	.14	.10	.08	.11	.14	1.18	1.70	.77	.62	.20	.21
IN.	.09	.16	.12	.10	.11	.17	1.32	1.96	.85	.72	.24	.24

CAL YR 1974 TOTAL 77394 MEAN 212 MAX 861 MIN 67 CFSM .23 IN 3.11
WTR YR 1975 TOTAL 150759 MEAN 413 MAX 3360 MIN 67 CFSM .45 IN 6.06

05275000 Elk River near Big Lake, Minn.

LOCATION.--Lat 45°20'02", long 93°40'00", in NE¼SW¼ sec.23, T.33 N., R.27 W., Sherburne County, on right bank at upstream side of highway bridge, 4 mi (6 km) east of Big Lake and 4 mi (6 km) downstream from St. Francis River.

DRAINAGE AREA.--615 mi^2 (1,593 km^2).

PERIOD OF RECORD.--April 1911 to September 1917, April to September 1931, April to November 1932, March to November 1933, March 1934 to current year.

GAGE.--Water-stage recorder. Datum of gage is 899.60 ft (274.20 m) above mean sea level, datum of 1929. April 1911 to Sept. 30, 1917, Apr. 1, 1931, to July 26, 1934, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--47 years (1911-17, 1934-75), 256 ft^3/s (7.25 m^3/s), 5.65 in/yr (144 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,910 ft^3/s (82.4 m^3/s) Apr. 23 (gage height, 7.19 ft or 2.192 m); minimum, 74 ft^3/s (2.10 m^3/s) Nov. 26 (gage height, 0.78 ft or 0.238 m).
Period of record: Maximum discharge, 7,360 ft^3/s (208 m^3/s) Apr. 16, 1965 (gage height, 10.86 ft or 3.310 m); minimum, 3.6 ft^3/s (0.102 m^3/s) July 31, 1934.

REMARKS.--Records good except those for periods of no gage-height record and those for winter periods, which are fair. Water-quality data for the current year are published in Part 2 of this report.

REVISIONS (WATER YEARS).--WSP 895: 1939. WSP 1308: 1912(M), 1915-17(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	84	211	130	110	90	105	192	2350	330	657	105	169
2	88	251	125	109	90	105	195	2580	280	617	105	156
3	93	243	122	108	90	106	198	2510	252	579	103	151
4	97	237	120	107	90	106	200	2240	246	551	101	140
5	101	230	120	106	90	106	202	2000	249	523	99	136
6	103	228	117	105	90	106	204	1600	240	495	97	133
7	105	217	117	104	91	106	207	1350	238	460	96	146
8	105	209	114	102	91	106	210	1190	239	421	89	145
9	99	203	116	100	91	106	213	1110	240	389	85	135
10	102	200	117	98	92	106	215	985	241	373	82	138
11	103	196	117	97	92	106	218	883	255	360	83	136
12	108	189	117	96	92	106	221	793	353	343	81	137
13	109	182	117	94	92	106	242	711	380	320	80	130
14	112	168	118	93	93	106	280	648	384	308	79	128
15	111	162	119	92	94	106	344	592	405	287	80	125
16	112	155	119	92	94	107	458	536	418	260	80	125
17	109	153	119	91	95	109	618	487	410	232	81	123
18	110	152	119	90	96	113	745	454	427	209	83	131
19	110	151	119	90	97	119	1000	408	442	193	84	142
20	108	150	119	90	98	122	1500	388	459	176	132	139
21	106	148	119	90	99	130	1900	382	635	165	171	145
22	108	148	119	90	100	140	2430	368	725	150	156	140
23	108	151	119	90	101	150	2890	372	754	140	167	142
24	108	151	119	90	102	155	2730	390	712	151	178	138
25	107	127	119	90	103	155	2410	400	670	146	176	135
26	107	110	118	90	104	160	2110	503	667	136	177	130
27	107	130	117	90	105	165	2050	515	660	127	170	126
28	111	135	116	90	105	170	2150	473	648	122	208	122
29	119	135	115	90	---	175	1900	425	627	116	212	121
30	129	134	114	90	---	185	1990	392	597	115	193	117
31	142	---	113	90	---	188	---	384	---	107	181	---
TOTAL	3319	5262	3669	2964	2667	3931	30098	28421	13183	9252	3814	4087
MEAN	107	175	118	95.6	95.3	127	1003	917	439	298	123	136
MAX	142	251	130	110	105	188	2890	2580	754	657	212	169
MIN	84	110	113	90	90	105	192	384	238	107	79	117
CFSM	.17	.28	.19	.16	.16	.21	1.63	1.49	.71	.48	.20	.22
IN.	.20	.32	.22	.18	.16	.24	1.82	1.72	.80	.56	.23	.25

CAL YR 1974 TOTAL 73227 MEAN 201 MAX 580 MIN 79 CFSM .33 IN 4.43
WTR YR 1975 TOTAL 110605 MEAN 303 MAX 2890 MIN 79 CFSM .49 IN 6.69

NOTE.--No gage-height record Jan. 30 to Mar. 2.

05278000 Middle Fork Crow River near Spicer, Minn.

LOCATION.--Lat 45°15'45", long 94°48'10", in NE¼ sec.27, T.121 N., R.33 W. Kandiyohi County, on right bank 75 ft (23 m) upstream from highway bridge, 1.5 mi (2.4 km) downstream from Lake Calhoun, 3 mi (4.8 km) downstream from Green Lake, and 6.8 mi (10.9 km) northeast of Spicer.

DRAINAGE AREA.--179 mi² (464 km²), approximately.

PERIOD OF RECORD.--March 1949 to current year.

GAGE.--Water-stage recorder and concrete and steel sharp-crested V-notch weir. Datum of gage is 1,147.93 ft (349.889 m) above mean sea level, datum of 1929 (Kandiyohi County Highway Department bench mark). Prior to July 20, 1950, nonrecording gage at bridge 75 ft (23 m) downstream at same datum.

AVERAGE DISCHARGE.--26 years, 52.9 ft³/s (1.498 m³/s), 4.01 in/yr (102 mm/yr).

EXTREMES.--Current year: Maximum discharge, 284 ft³/s (8.04 m³/s) May 21 (gage height, 4.88 ft or 1.487 m); no flow Jan. 11-30.

Period of record: Maximum discharge, 408 ft³/s (11.6 m³/s) June 29, 1953 (gage height, 6.52 ft or 1.987 m); maximum gage height, 6.67 ft (2.033 m) June 25, 1957; no flow Mar. 15-24, 1949, Feb. 26 to Mar. 26, 1960, Dec. 8, 1963, Feb. 10-21, 1965, Feb. 19-28, 1968, Jan. 11-30, 1975.

REMARKS.--Records good except those for winter periods, which are fair. Flow affected by natural storage and some regulation from lakes above station.

REVISIONS (WATER YEARS).--WSP 1508: 1949(M), 1950.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	1.5	1.3	1.6	.03	9.0	25	253	214	134	44	26
2	1.2	1.4	1.3	1.6	.05	9.1	26	220	202	129	48	23
3	1.2	1.3	1.3	1.6	.07	9.3	27	226	196	120	45	24
4	1.3	1.3	1.3	1.5	.12	9.6	29	223	190	122	43	23
5	1.3	1.3	1.3	1.5	.19	9.9	30	231	187	117	41	23
6	1.3	1.2	1.3	1.5	.29	10	32	240	179	115	37	22
7	1.2	1.3	1.3	1.5	.48	10	35	247	165	111	32	24
8	1.3	1.3	1.3	1.5	.73	10	37	259	155	109	30	22
9	1.3	1.2	1.3	1.4	1.2	10	40	264	148	106	30	20
10	1.3	1.3	1.4	.13	1.9	11	44	269	146	104	29	19
11	1.2	1.3	1.4	0	2.8	11	50	259	150	100	27	20
12	1.2	1.2	1.4	0	3.7	11	54	242	155	94	26	18
13	1.3	1.2	1.4	0	4.5	11	57	254	148	90	26	16
14	1.2	1.2	1.4	0	5.2	11	65	280	143	87	23	15
15	1.2	1.2	1.4	0	6.4	12	74	278	140	83	22	14
16	1.2	1.2	1.4	0	7.4	13	78	272	154	76	22	13
17	1.2	1.2	1.4	0	8.0	16	95	266	148	68	21	12
18	1.2	1.2	1.4	0	8.2	18	111	266	143	69	20	16
19	1.2	1.2	1.4	0	8.4	20	113	266	133	66	19	17
20	1.2	1.2	1.4	0	8.5	21	115	265	131	66	23	17
21	1.2	1.2	1.5	0	8.6	21	104	281	171	64	24	15
22	1.2	1.2	1.5	0	8.8	22	119	281	165	62	22	12
23	1.2	1.2	1.6	0	8.8	22	129	276	175	62	22	11
24	1.2	1.2	1.6	0	8.9	22	132	270	161	64	22	9.1
25	1.2	1.2	1.6	0	8.9	23	140	262	147	58	21	8.7
26	1.2	1.2	1.6	0	8.9	23	142	269	141	55	20	8.5
27	1.2	1.2	1.6	0	9.0	23	165	264	144	54	18	8.1
28	1.2	1.2	1.6	0	9.0	23	209	256	137	50	43	8.3
29	1.3	1.2	1.6	0	---	24	237	243	134	48	37	8.3
30	1.3	1.3	1.6	0	---	24	241	232	129	45	32	9.3
31	1.3	---	1.6	.02	---	25	---	229	---	43	28	---
TOTAL	38.2	37.3	44.5	13.85	139.20	495.9	2755	7934	4769	2579	895	482.3
MEAN	1.23	1.24	1.44	.45	4.97	15.9	91.8	256	159	83.2	28.9	16.1
MAX	1.3	1.5	1.6	1.6	9.0	25	241	281	214	134	48	26
MIN	1.2	1.2	1.3	0	.03	9.0	25	223	129	43	18	8.1
CFSM	.007	.007	.008	.003	.03	.09	.51	1.43	.89	.46	.16	.09
IN.	.008	.008	.009	.003	.03	.10	.57	1.65	.99	.54	.19	.10

CAL YR 1974 TOTAL 12420.80 MEAN 34.0 MAX 135 MIN 1.1 CFSM .19 IN 2.58
WTR YR 1975 TOTAL 20181.31 MEAN 55.3 MAX 281 MIN 0 CFSM .31 IN 4.19

05278930 Buffalo Creek near Glencoe, Minn.

LOCATION.--Lat 44°45'50", long 94°05'27", in SW¼SW¼ Sec.16, T.115 N., R.27 W., McLeod County, on right bank, 20 ft (6 m) downstream from bridge on County Highway 1, 2.6 mi (4.2 km) east of Glencoe.

DRAINAGE AREA.--374 mi² (969 km²).

PERIOD OF RECORD.--Annual maximum, water year 1972, October 1972 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 969.60 ft (295.53 m) above mean sea level, datum of 1929. October 1, 1971, to September 30, 1972, crest-stage gage at present site and datum.

EXTREMES.--Current year: Maximum discharge, 2,190 ft³/s (62.0 m³/s) Apr. 28 (gage height, 9.49 ft or 2.893 m); minimum, 0.80 ft³/s (0.02 m³/s) Oct. 9, 10, 11; minimum gage height, 0.75 ft (0.229 m) Sept. 18.
Period of record: Maximum discharge, 2,370 ft³/s (67.1 m³/s) May 28, 1972 (gage height, 10.01 ft or 3.051 m) from crest-stage gage; minimum, 0.80 ft³/s (0.02 m³/s) Oct. 9, 10, 11, 1974; minimum gage height, 0.75 ft (0.229 m) Sept. 18, 1975.

REMARKS.--Records good except those for winter periods, which are fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.8	14	4.1	4.4	10	9.5	3.2	1700	251	706	18	9.2
2	3.3	2.9	3.8	4.0	10	9.4	3.2	1330	201	604	17	7.2
3	3.7	4.1	3.5	4.0	10	9.4	3.2	1060	157	509	15	5.9
4	3.7	4.7	3.5	4.1	9.9	9.4	3.2	920	130	424	19	5.9
5	3.5	5.5	3.5	4.0	9.9	9.3	3.2	800	109	354	16	5.5
6	4.2	7.7	3.5	4.0	9.8	9.2	3.3	670	94	293	18	4.7
7	1.0	7.2	3.5	4.2	9.8	9.0	3.7	560	84	244	18	4.4
8	.89	5.9	3.2	4.3	9.8	8.7	4.7	465	75	213	16	4.1
9	.80	5.1	3.2	3.2	9.8	8.5	6.3	400	69	212	14	3.8
10	.90	5.5	4.4	1.5	9.8	8.4	8.9	345	66	215	12	4.7
11	1.0	5.9	3.8	2.4	9.8	8.1	12	296	68	191	9.7	4.1
12	1.4	5.1	4.4	3.5	9.8	8.0	17	253	75	157	9.4	2.4
13	1.6	5.1	4.7	5.0	9.8	7.7	22	216	72	132	8.6	2.2
14	1.6	12	4.7	7.0	9.8	7.6	37	180	79	120	7.0	1.8
15	1.8	12	4.4	10	9.7	7.6	60	156	129	105	7.0	1.3
16	1.8	11	4.1	14	9.7	7.8	100	143	123	88	11	1.4
17	1.8	11	4.1	15	9.7	7.9	242	134	137	74	11	1.3
18	2.0	11	3.8	15	9.7	8.0	306	122	165	68	11	4.1
19	2.2	11	4.1	14	9.6	8.1	301	112	183	60	12	2.2
20	2.2	11	4.0	14	9.6	8.2	379	107	203	52	12	4.4
21	2.2	10	4.0	13	9.6	7.8	413	106	237	46	14	3.8
22	2.4	10	4.0	13	9.6	7.2	518	116	372	41	12	3.5
23	2.4	10	4.0	12	9.6	6.7	782	131	556	38	11	4.1
24	2.4	10	4.0	12	9.6	6.3	755	134	1910	35	10	2.6
25	2.9	9.7	4.0	12	9.5	5.9	790	137	1930	32	9.2	2.6
26	2.9	9.7	4.0	12	9.5	5.4	1370	147	1600	30	7.7	2.2
27	2.9	8.7	4.1	11	9.5	4.8	1980	165	1280	28	6.7	1.4
28	3.2	7.7	4.4	11	9.5	4.3	2180	176	1030	25	11	1.6
29	4.4	6.3	4.8	11	---	3.7	2160	206	872	23	7.2	2.0
30	5.1	5.1	4.8	10	---	3.5	2100	262	790	22	11	2.0
31	2.9	---	4.8	10	---	3.3	---	281	---	19	12	---
TOTAL	75.89	244.9	125.2	264.6	272.4	228.7	14566.9	11832	13047	5160	373.5	106.4
MEAN	2.45	8.16	4.04	8.54	9.73	7.38	486	382	435	166	12.0	3.55
MAX	5.1	14	4.8	15	10	9.5	2180	1700	1930	706	19	9.2
MIN	.80	2.9	3.2	1.5	9.5	3.3	3.2	106	66	19	6.7	1.3

CAL YR 1974 TOTAL 23696.09 MEAN 64.9 MAX 499 MIN .80
WTR YR 1975 TOTAL 46297.49 MEAN 127 MAX 2180 MIN .80

NOTE: No gage-height record Apr. 26-29.

05279000 South Fork Crow River near Mayer, Minn.

LOCATION.--Lat 44°54'20", long 93°53'05", in SW¼SW¼ sec.30, T.117 N., R. 25 W., Carver County, near center of span on downstream side of bridge on State Highway 7, 1.3 mi (2.1 km) north of Mayer, 4.3 mi (6.9 km) southwest of Watertown, and 16 mi (26 km) upstream from confluence with North Fork.

DRAINAGE AREA.--1,170 mi² (3,030 km²), approximately.

PERIOD OF RECORD.--April 1934 to current year. Monthly discharge only for some periods, published in WSP 1308.

GAGE.--Nonrecording gage read once or twice daily. Datum of gage is 925.78 ft (282.18 m) above mean sea level, datum of 1929 (levels by Minnesota Highway Department).

AVERAGE DISCHARGE.--41 years, 259 ft³/s (7.33 m³/s), 3.01 in/yr (76 mm/yr).

EXTREMES.--Current year: Maximum discharge, 5,900 ft³/s (167 m³/s) Apr. 30 (gage height, 13.90 ft or 4.237 m); minimum daily, 3.7 ft³/s (0.10 m³/s) Sept. 28.

Period of record: Maximum discharge, 16,100 ft³/s (456 m³/s) Apr. 13, 1965 (gage height, 19.23 ft or 5.861 m, from floodmark); no flow at times.

REMARKS.--Records good except those for winter period, which are fair. Water quality data for the current year are published in Section 2 of this report.

REVISIONS (WATER YEARS).--WSP 1508: 1935-36.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.2	23	12	6.4	6.4	18	70	5690	624	1740	50	26
2	14	38	12	6.3	6.8	19	69	5400	562	1480	53	24
3	13	35	11	6.2	7.1	19	68	4660	516	1240	49	22
4	16	31	11	6.1	7.3	19	68	3760	468	1010	46	20
5	25	26	10	6.0	7.5	19	68	3060	415	800	48	14
6	52	20	9.8	5.9	7.8	19	68	2650	377	675	47	15
7	44	20	9.5	5.8	8.0	20	68	2310	316	605	46	13
8	35	21	9.2	5.7	8.4	20	68	2110	287	511	40	11
9	28	20	8.8	5.6	8.7	20	70	1960	248	466	37	8.8
10	18	20	8.7	5.5	9.0	20	72	1790	230	413	34	10
11	18	19	8.6	5.4	9.4	20	76	1660	223	396	29	11
12	16	20	8.6	5.3	9.7	20	84	1500	147	354	26	12
13	16	19	8.5	5.2	10	20	110	1370	147	312	24	10
14	16	14	8.4	5.2	10	20	180	1230	124	274	23	8.8
15	16	8.1	8.3	5.1	11	20	280	1150	441	235	21	7.4
16	15	27	8.3	5.1	11	21	450	1050	539	214	20	5.1
17	14	24	8.3	5.1	11	22	600	978	770	194	21	4.2
18	12	20	8.2	5.1	12	23	872	870	579	173	24	7.4
19	13	24	8.0	5.1	13	27	1100	767	610	154	24	9.4
20	12	24	7.8	5.1	13	33	1400	870	600	141	29	14
21	11	21	7.6	5.1	14	40	1680	855	596	126	28	18
22	10	21	7.5	5.1	15	78	1770	821	740	108	24	15
23	9.4	21	7.4	5.1	15	77	2160	834	923	103	29	12
24	9.4	20	7.2	5.1	16	76	2640	790	1100	106	28	9.4
25	8.8	11	7.1	5.1	17	75	3020	744	1620	96	20	7.4
26	8.1	12	7.0	5.1	17	74	3060	700	2130	87	21	7.4
27	7.4	13	6.9	5.1	17	73	3470	660	2420	77	21	5.1
28	7.4	14	6.8	5.2	18	72	4700	644	2420	70	27	3.7
29	10	14	6.7	5.4	---	71	5810	632	2290	67	30	4.6
30	14	13	6.6	5.6	---	70	5880	639	1960	62	26	4.2
31	19	---	6.5	6.0	---	70	---	653	---	58	26	---
TOTAL	511.7	613.1	262.3	169.1	316.1	1195	40031	52807	24422	12347	971	339.9
MEAN	16.5	20.4	8.46	5.45	11.3	38.5	1334	1703	814	398	31.3	11.3
MAX	52	38	12	6.4	18	78	5880	5690	2420	1740	53	26
MIN	4.2	8.1	6.5	5.1	6.4	18	68	632	124	58	20	3.7
CFSM	.01	.02	.007	.005	.010	.03	1.14	1.46	.70	.34	.03	.010
IN.	.02	.02	.008	.005	.01	.04	1.27	1.68	.78	.39	.03	.01

CAL YR 1974 TOTAL 79782.9 MEAN 219 MAX 1280 MIN 4.2 CFSM .19 IN 2.54
WTR YR 1975 TOTAL 133985.2 MEAN 367 MAX 5880 MIN 3.7 CFSM .31 IN 4.26

05280000 Crow River at Rockford, Minn.

LOCATION.--Lat 45°05'12", long 93°44'02", in sec.29, T.119 N., R.24 W., Hennepin County, on right bank at Rockford, 150 ft (46 m) downstream from bridge on State Highway 55 and 1 mi (1.6 km) downstream from confluence of North and South Forks.

DRAINAGE AREA.--2,520 mi² (6,530 km²), approximately.

PERIOD OF RECORD.--April to July 1906 (published as "near Dayton"), June 1909 to September 1917, April to November 1929, March 1930 to September 1931, April to November 1932, March to November 1933, March 1934 to current year. Monthly discharge only for some periods, published in WSP 1308.

GAGE.--Water-stage recorder. Datum of gage is 893.08 ft (272.21 m) above mean sea level, datum of 1929. Apr. 13 to July 21, 1906, nonrecording gage at Berning Mill 14 mi (22.5 km) downstream at different datum. June 4, 1909, to Sept. 30, 1917, nonrecording gage at site 600 ft (183 m) downstream at different datum. Apr. 23, 1929, to Aug. 21, 1934, nonrecording gage at site 600 ft (183 m) downstream at present datum.

AVERAGE DISCHARGE.--50 years (1909-17, 1930-31, 1934-75), 634 ft³/s (18.0 m³/s), 3.42 in/yr (87 mm/yr).

EXTREMES.--Current year: Maximum discharge, 8,660 ft³/s (245 m³/s) May 3 (gage height, 12.90 ft or 3.932 m); minimum, 3.4 ft³/s (0.096 m³/s) Nov. 15 (gage height, 1.11 ft or 0.338 m) result of freezeup.
Period of record: Maximum discharge, 22,400 ft³/s (634 m³/s) Apr. 16, 1965 (gage height, 19.27 ft or 5.874 m, from floodmark); minimum, 1.8 ft³/s (0.051 m³/s) Nov. 15, 1936 (gage height, 1.05 ft or 0.320 m), caused by ice jam upstream.

REMARKS.--Records good except those for winter period, which are fair. Water-quality data for the current year are published in Part 2 of this report.

REVISIONS (WATER YEARS).--WSP 1115: 1932. WSP 1508: 1933.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48	113	66	68	57	74	168	8220	2160	4280	312	298
2	48	111	65	68	57	75	168	8610	2050	3840	306	279
3	53	115	64	66	57	78	175	8630	1930	3590	282	266
4	68	115	64	66	57	79	180	8320	1820	3320	276	235
5	71	111	63	66	57	80	189	7760	1710	3040	263	223
6	82	106	63	66	56	81	192	7240	1590	2700	257	215
7	82	102	62	64	56	81	197	6680	1480	2410	235	206
8	90	98	62	62	58	81	203	6170	1350	2140	226	197
9	90	96	61	60	60	81	208	5740	1240	1930	209	192
10	90	96	60	58	62	81	218	5380	1160	1750	195	192
11	84	96	59	45	64	81	254	5070	1110	1600	178	189
12	80	92	58	43	65	81	309	4770	1280	1480	167	183
13	80	96	60	42	66	81	408	4450	1270	1340	153	170
14	80	82	62	41	66	82	550	4190	1210	1220	146	181
15	89	54	64	40	67	82	805	3950	1280	1110	143	181
16	78	82	67	43	67	83	1010	3700	1420	1040	138	167
17	73	74	70	45	67	84	1400	3490	1460	973	138	158
18	73	88	71	48	65	85	1880	3250	1470	869	134	167
19	73	111	71	52	68	88	2280	3120	1500	820	134	162
20	71	115	71	54	68	94	2500	3150	1500	757	153	158
21	69	90	71	55	69	100	2880	3100	1560	692	156	162
22	68	84	72	56	69	120	3070	3040	1660	634	159	164
23	66	80	72	56	70	145	3400	2980	1880	580	164	159
24	65	73	72	56	71	170	3770	2850	2080	550	162	153
25	64	69	72	56	71	182	4180	2750	2300	520	151	146
26	64	68	73	56	72	185	4580	2760	2700	487	130	130
27	64	66	73	56	73	184	5060	2630	3170	455	134	131
28	64	66	72	56	72	180	5800	2520	3520	425	146	124
29	68	66	72	57	---	176	6510	2400	3690	388	167	122
30	74	66	70	57	---	172	7520	2320	3790	354	241	120
31	80	---	69	57	---	170	---	2240	---	330	312	---
TOTAL	2239	2655	2071	1715	1812	3416	60042	141460	56340	45690	5975	5434
MEAN	72.2	88.5	66.8	55.3	64.7	110	2001	4563	1878	1474	193	181
MAX	90	115	73	68	73	185	7520	8630	3790	4280	312	298
MIN	48	54	58	40	56	74	168	2240	1110	330	130	120
CFSM	.03	.04	.03	.02	.03	.04	.79	1.81	.75	.58	.08	.07
IN.	.03	.04	.03	.03	.03	.05	.89	2.09	.83	.67	.09	.08

CAL YR 1974 TOTAL 221907 MEAN 608 MAX 2930 MIN 48 CFSM .24 IN 3.27
WTR YR 1975 TOTAL 328875 MEAN 901 MAX 8630 MIN 40 CFSM .36 IN 4.85

05284000 Mille Lacs Lake at Garrison, Minn.

LOCATION.--Lat 46°18'05", long 93°49'05", in SW¼SE¼ sec.12, T.44 N., R.28 W., Crow Wing County, at pumphouse of Minnesota Division of Game and Fish, 0.2 mi (0.3 km) southwest of Borden Lake outlet and 0.8 mi (1.3 km) northeast of Garrison.

PERIOD OF RECORD.--June 1931 to current year. Monthend records for the period October 1939 to September 1953 published in WSP 1278 (fragmentary 1940-41). Prior to October 1939, published as "at Wealthwood".

GAGE.--Water-stage recorder. Datum of gage is 1,240.40 ft (378.074 m) above mean sea level, datum of 1929. Prior to Oct. 1, 1941, nonrecording gage at Wealthwood, 8.3 mi (13.4 km) northeast of present site, at various datums; gage readings have been reduced to elevations above mean sea level, adjustment of 1912. Oct. 1, 1941, to Sept. 30, 1958, water-stage recorder at datum 1,240.50 ft (378.104 m) above mean sea level, adjustment of 1912. To convert these records to datum of 1929, subtract 0.10 ft (0.030 m).

EXTREMES.--Current year: Maximum elevation, 1,253.40 ft (382.036 m) June 30 (affected by wind action and seiche action); maximum daily, 1,252.78 ft (381.847 m) July 5; minimum, 1,250.75 ft (381.229 m) Dec. 9 (affected by wind action and seiche action); minimum daily, 1,250.90 ft (381.274 m) Dec. 12-14.

Period of record: Maximum elevation, 1,253.87 ft (382.180 m) Aug. 14, 1972 (affected by wind action and seich action); maximum daily, 1,253.43 ft (382.045 m) Aug. 22, 1972; minimum observed, 1,245.74 ft (379.702 m) Oct. 16-19, 1936.

REMARKS.--Water level affected by fixed-crest spillway constructed in 1953 at outlet of Ogechie Lake, 30.7 mi (49.4 km) downstream, with crest at elevation 1,250.50 ft (381.152 m). Water level subject to fluctuation caused by change in direction and velocity of wind and by seiches.

MONTHEND ELEVATION, IN FEET, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

Oct. 31	1,250.98	Feb. 28	1,251.22	June 30	1,252.45
Nov. 30	1,250.95	Mar. 31	1,251.36	July 31	1,252.34
Dec. 31	1,250.94	Apr. 30	1,251.92	Aug. 31	1,251.84
Jan. 31	1,251.20	May 31	1,252.06	Sept.30	1,251.39

NOTE.--Elevations other than those shown are available.

05286000 Rum River near St. Francis, Minn.

LOCATION.--Lat 45°19'40", long 93°22'20", in SE¼ sec.19, T.33 N., R.24 W., Anoka County, on left bank at upstream side of highway bridge, 4 mi (6.4 km) south of St. Francis and 15.8 mi (25.4 km) upstream from mouth.

DRAINAGE AREA.--1,360 mi² (3,520 km²), approximately.

PERIOD OF RECORD.--May to November 1929, March 1930 to September 1931, April to November 1932, March 1933 to current year.

GAGE.--Water-stage recorder. Datum of gage is 860.74 ft (262.35 m) above mean sea level, datum of 1929 (Levels by Anoka County Highway Department). Prior to Nov. 9, 1933, nonrecording gage at site 50 ft (15 m) downstream at same datum.

AVERAGE DISCHARGE.--43 years (1930-31, 1933-75), 597 ft³/s (16.9 m³/s), 5.96 in/yr (151 mm/yr).

EXTREMES.--Current year: Maximum discharge, 8,130 ft³/s (230 m³/s) May 3 (gage height, 10.19 ft or 3.106 m); minimum, 156 ft³/s (4.42 m³/s) Mar. 24 (gage height, 2.33 ft or 0.710 m).
Period of record: Maximum discharge, 10,100 ft³/s (286 m³/s) Apr. 20, 1965, Apr. 13, 1969; maximum gage height, 11.63 ft (3.545 m) Apr. 13, 1969; minimum discharge, 29 ft³/s (0.82 m³/s) Aug. 18, 1934 (gage height, 1.91 ft or 0.582 ft).

REMARKS.--Records good except those for winter period, which are fair. Water-quality data for the current year are published in Part 2 of this report. Occasional regulation by Ogechie (also controls Mille Lacs Lake) and Onamia Lakes.

REVISIONS (WATER YEARS).--WSP 1308: 1930(M), 1932(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	292	397	293	251	285	305	320	7180	1070	2090	585	700
2	288	488	285	251	290	305	320	7950	996	2090	618	640
3	279	529	280	251	290	305	320	8080	987	2280	597	610
4	288	545	280	251	290	305	320	7950	898	2370	585	580
5	292	560	280	251	290	305	325	7430	870	2480	575	550
6	301	570	275	251	292	305	330	6510	831	2620	571	540
7	297	560	270	251	292	310	350	5510	805	2850	558	575
8	301	540	270	251	292	310	370	4610	786	3180	539	580
9	306	520	265	251	295	310	400	3940	772	3420	527	542
10	306	500	260	251	295	315	480	3450	760	3420	507	549
11	297	466	260	251	295	315	535	3040	779	3200	483	553
12	297	456	255	251	295	315	588	2700	928	2880	474	562
13	292	444	254	251	295	315	656	2340	1050	2530	469	599
14	288	429	252	251	295	315	772	2010	1090	2040	451	612
15	284	418	252	255	295	315	954	1760	1190	1630	437	590
16	288	397	253	255	295	315	1250	1540	1260	1360	430	555
17	284	362	254	257	295	315	1660	1350	1310	1170	424	527
18	284	353	255	259	297	315	2070	1240	1390	1060	417	560
19	284	377	255	260	300	315	2300	1150	1460	986	415	611
20	279	387	256	260	300	318	2670	1090	1500	924	479	613
21	275	408	256	262	300	320	3570	1040	1660	867	511	621
22	279	397	256	265	300	320	5300	1010	1910	827	535	627
23	279	372	256	270	300	320	6730	1020	2070	796	672	620
24	275	348	256	270	300	202	7310	1070	2090	766	774	600
25	267	333	256	275	300	350	7320	1110	2020	729	831	580
26	267	330	255	275	300	340	7000	1190	2010	702	780	560
27	271	325	254	280	300	330	6760	1250	2040	683	740	540
28	271	318	253	282	300	320	6820	1310	2010	663	790	520
29	279	310	252	282	---	320	6760	1300	1940	638	850	491
30	288	300	251	285	---	320	6680	1240	1920	614	800	487
31	297	---	251	285	---	320	---	1160	---	597	740	---
TOTAL	8875	12739	8100	8091	8273	9696	81240	93530	40342	52462	18104	17294
MEAN	286	425	261	261	295	313	2708	3017	1345	1692	584	576
MAX	306	570	293	285	300	350	7320	8080	2090	3420	850	700
MIN	267	300	251	251	285	202	320	1010	760	597	415	487
CFSM	.21	.31	.19	.19	.22	.23	1.99	2.22	.99	1.24	.43	.42
IN.	.24	.35	.22	.22	.23	.27	2.22	2.56	1.10	1.43	.50	.47
AC-FT	17600	25270	16070	16050	16410	19220	161100	185500	80020	104100	36030	34300

CAL YR 1974 TOTAL 233487 MEAN 640 MAX 2620 MIN 251 CFSM .47 IN 6.39 AC-FT 463100
WTR YR 1975 TOTAL 358806 MEAN 983 MAX 8080 MIN 202 CFSM .72 IN 9.81 AC-FT 711700

05288500 Mississippi River near Anoka, Minn.

LOCATION.--Lat 45°07'36", long 93°17'48", in SW¼ sec.12, T.119 N., R.21 W., Hennepin County, on right bank 0.5 mi (0.8 km) downstream from Coon Creek, 1.5 mi (2.4 km) downstream from Coon Rapids Dam at Coon Rapids, 6.5 mi (10.5 km) downstream from Anoka, and at mile 864.8 (1,391.5 km) upstream from Ohio River.

DRAINAGE AREA.--19,100 mi^2 (49,500 km^2), approximately.

PERIOD OF RECORD.--June 1931 to current year. Prior to October 1931 published as "at Coon Rapids, near Anoka."

GAGE.--Water-stage recorder. Datum of gage is 804.53 ft (245.22 m) above mean sea level, datum of 1929. Prior to June 14, 1932, at site 1.2 mi (1.9 km) upstream at different datum.

AVERAGE DISCHARGE.--44 years, 7,575 ft^3/s (215 m^3/s), 5.39 in/yr (137 mm/yr).

EXTREMES.--Current year: Maximum discharge, 59,200 ft^3/s (1,680 m^3/s) May 2 (gage height, 14.61 ft or 4.453 m); minimum daily, 1,370 ft^3/s (38.8 m^3/s) Jan. 12; minimum gage height, 1.33 ft (0.405 m) Oct. 4.

Period of record: Maximum discharge, 91,000 ft^3/s (2,580 m^3/s) Apr. 17, 1965 (gage height, 19.53 ft or 5.953 m); minimum, 586 ft^3/s (16.6 m^3/s) Sept. 13, 1934 (gage height, 0.37 ft or 0.113 m); minimum gage height, 0.13 ft (0.040 m) Nov. 28, 1967.

REMARKS.--Records good. Flow slightly regulated by six reservoirs on headwaters; total usable capacity, 1,640,600 acre-ft (2.02 km^3). Diurnal regulation caused by dam above station. Water-quality data for the current year are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2510	4430	4330	5060	5300	5130	6550	58200	18500	23300	8210	6420
2	2570	4790	4890	4200	5700	5210	6670	58800	17700	24600	8210	5600
3	2820	6030	5110	4850	5600	5130	6730	58800	17100	24900	7950	6740
4	2290	6320	5010	4920	5400	5140	7040	57600	16300	26200	7310	5710
5	2450	7540	4810	4180	5300	5170	6860	55400	15700	27300	7410	5650
6	2630	7900	4760	4560	5200	5090	7150	52600	14700	27000	6390	5670
7	3120	8090	5100	5260	5100	5190	7200	49200	13700	27500	7030	5940
8	3410	8400	4880	4950	5200	5100	7210	46400	13100	26700	6300	5800
9	3000	7930	5160	5800	5400	5160	7320	43200	12400	25500	6360	5740
10	2950	8050	3970	5190	5000	5180	7250	40800	11900	25000	6170	6140
11	2970	8000	5120	3520	5200	5130	7520	38800	11600	23800	5950	6430
12	2890	8160	6590	1370	5300	5200	8140	37000	11700	22500	5900	6090
13	3180	8330	5610	2870	5100	4990	8600	35000	12100	21400	6010	6180
14	3680	7500	4720	3300	5300	4970	8950	33100	12100	20400	5890	6170
15	3730	7490	4680	3910	5400	5050	10100	31600	12400	19200	5520	5880
16	4260	6770	4420	4170	5600	5110	12600	29900	13500	18100	5240	5550
17	4540	7090	4230	5140	5500	5140	15000	28100	13600	17300	5270	5510
18	4080	6640	4710	5280	5400	5270	19500	26900	14600	16000	5200	6340
19	4270	6900	4890	4950	5700	5410	24100	26000	14500	15500	5450	6270
20	3610	6930	4470	4760	5500	5430	29000	24900	14500	14000	6200	6240
21	3180	7340	4330	4840	5200	5920	36200	23500	17000	13400	5770	6920
22	3250	7060	4400	4730	5400	6740	42800	21300	18000	12600	5760	6180
23	3840	6830	4560	5160	5400	8380	48200	21900	19000	12100	6140	5760
24	4100	6130	4500	5500	5200	6830	49400	22400	19500	11600	6850	6300
25	4060	6470	3990	5800	5100	6580	50000	22300	19200	11600	6730	6180
26	3860	5250	4240	5590	5280	5630	50200	22900	19300	10300	6520	6020
27	3580	5270	5400	5350	5290	5400	51500	22200	19900	9750	6130	5740
28	3900	4900	5300	5260	5240	5830	54500	21400	19600	9440	6570	5990
29	4210	4350	4570	5340	---	6700	57100	20700	19400	9350	6360	6090
30	4130	3730	4480	5300	---	6580	57600	19800	19400	8880	6850	5960
31	3740	---	4700	5150	---	6580	---	19100	---	8640	6910	---
TOTAL	106770	200620	147930	146260	149310	174370	710990	1069800	472000	563860	198560	181210
MEAN	3444	6687	4772	4718	5333	5625	23700	34510	15730	18190	6405	6040
MAX	4540	8400	6590	5800	5700	8380	57600	58800	19900	27500	8210	6920
MIN	2290	3730	3970	1370	5000	4970	6550	19100	11600	8640	5200	5510
CFSM	.18	.35	.25	.25	.28	.29	1.24	1.81	.82	.95	.34	.32
IN.	.21	.39	.29	.28	.29	.34	1.38	2.08	.92	1.10	.39	.35

CAL YR 1974 TOTAL 3309930 MEAN 9068 MAX 28800 MIN 2230 CFSM .47 IN 6.45
WTR YR 1975 TOTAL 4121680 MEAN 11290 MAX 58800 MIN 1370 CFSM .59 IN 8.03

05290000 Little Minnesota River near Peever, S. Dak.

LOCATION.--Lat 45°36'05", long 96°52'18", in SW¼ sec.13, T.125 N., R.50 W., Roberts County, on right bank 2 mi (3 km) northwest of town of Browns Valley, Minn., 3.2 mi (5.1 km) upstream from proposed Lake Traverse diversion, 5.3 mi (8.5 km) northeast of Peever, 7.2 mi (11.6 km) downstream from Jorgenson River, and 8 mi (13 km) upstream from Big Stone Lake.

DRAINAGE AREA.--447 mi^2 (1,158 km^2).

PERIOD OF RECORD.--October 1939 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,000 ft (305 m) (from topographic map). Oct. 1, 1939, to Mar. 20, 1940, nonrecording gage at site 4.5 mi (7.2 km) downstream at different datum. Mar. 21 to Apr. 12, 1940, nonrecording gage at site 100 ft (30 m) downstream at present datum. April 13 to Aug. 27, 1940, nonrecording gage at present site and datum.

AVERAGE DISCHARGE.--36 years, 43.9 ft^3/s (1.24 m^3/s), 1.33 in/yr (34 mm/yr), 31,810 acre-ft/yr (39.2 hm^3/yr).

EXTREMES.--Current year: Maximum discharge, 352 ft^3/s (9.97 m^3/s) June 21 (gage height, 4.38 ft or 1.335 m, from floodmark); minimum, 0.01 ft^3/s (0.28 dm^3/s) Sept. 4, 6; minimum gage height, 1.99 ft (0.607 m) Aug. 11, 12, 13.

Period of record: Maximum discharge, 4,730 ft^3/s (134 m^3/s) Apr. 8, 1952 (gage height, 12.16 ft or 3.706 m); maximum gage height, 13.35 ft (4.069 m) Mar. 25, 1943, from floodmark (backwater from ice); no flow at times in 1940, 1942, 1950, 1954, 1957, 1959, 1963, 1968.

REMARKS.--Records good except those for winter periods, which are fair.

REVISIONS (WATER YEARS).--WSP 1308: 1943(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.30	.99	.49	.54	.50	.66	1.1	280	7.3	40	.69	.07
2	.28	.85	.48	.54	.50	.67	1.1	234	6.7	34	.74	.05
3	.26	.72	.48	.54	.50	.69	1.1	197	6.2	28	.53	.03
4	.25	.65	.50	.54	.50	.73	1.1	172	6.3	24	.43	.03
5	.32	.65	.52	.54	.50	.74	1.1	150	5.7	20	.38	.03
6	.40	.57	.54	.54	.50	.74	1.2	130	5.2	17	.32	.04
7	.44	.54	.56	.54	.50	.74	1.3	111	4.6	13	.29	.05
8	.43	.60	.58	.54	.50	.74	1.4	96	4.6	11	.25	.06
9	.47	.60	.59	.53	.50	.75	2.0	85	5.3	9.8	.21	.08
10	.47	.55	.60	.52	.50	.75	3.5	75	5.2	8.6	.20	.08
11	.47	.57	.59	.51	.50	.75	4.2	67	4.8	7.4	.17	.08
12	.51	.57	.61	.50	.50	.75	5.0	59	6.0	6.4	.16	.05
13	.51	.55	.61	.50	.50	.76	7.0	51	5.7	5.6	.14	.09
14	.61	.53	.61	.49	.50	.78	12	46	6.6	4.7	.16	.11
15	.50	.53	.61	.49	.50	.82	27	41	9.4	4.0	.13	.10
16	.47	.53	.61	.49	.50	.90	35	36	10	3.5	.12	.15
17	.50	.52	.61	.49	.50	1.0	75	32	28	3.1	.15	.17
18	.51	.52	.61	.49	.50	1.2	125	28	22	2.5	.19	.14
19	.51	.52	.60	.49	.51	1.8	140	25	23	1.8	.25	.16
20	.49	.51	.60	.49	.52	2.9	149	23	80	1.4	1.2	.15
21	.51	.51	.59	.49	.54	1.4	162	21	320	1.1	.45	.13
22	.55	.50	.58	.49	.55	1.3	180	19	280	1.0	.23	.26
23	.55	.50	.57	.49	.57	3.5	200	22	220	.89	.23	.23
24	.55	.50	.56	.49	.58	2.0	241	22	175	.77	.12	.24
25	.55	.49	.55	.50	.59	1.3	254	17	140	.66	.07	.25
26	.55	.49	.54	.50	.61	1.2	257	13	110	.56	.07	.25
27	.54	.49	.54	.50	.62	1.1	270	11	94	.49	.06	.32
28	.58	.49	.54	.50	.64	1.1	279	9.2	71	.44	.11	.54
29	.64	.49	.54	.50	---	1.1	304	8.4	56	.36	.11	.85
30	.63	.49	.54	.50	---	1.1	317	7.7	48	.34	.10	.74
31	.75	---	.54	.50	---	1.1	---	7.8	---	.35	.08	---
TOTAL	15.10	17.02	17.49	15.77	14.73	35.07	3058.1	2096.1	1766.6	252.76	8.34	5.53
MEAN	.49	.57	.56	.51	.53	1.13	102	67.6	58.9	8.15	.27	.18
MAX	.75	.99	.61	.54	.64	3.5	317	280	320	40	1.2	.85
MIN	.25	.49	.48	.49	.50	.66	1.1	7.7	4.6	.34	.06	.03
CFSM	.001	.001	.001	.001	.001	.003	.23	.15	.13	.02	.0006	.0004
IN.	.001	.001	.001	.001	.001	.003	.25	.17	.15	.02	.0007	.0005
AC-FT	30	34	35	31	29	70	6070	4160	3500	501	17	11

CAL YR 1974 TOTAL 3493.25 MEAN 9.57 MAX 220 MIN .06 CFSM .02 IN .29 AC-FT 6930
WTR YR 1975 TOTAL 7302.61 MEAN 20.0 MAX 320 MIN .03 CFSM .04 IN .61 AC-FT 14480

PEAK DISCHARGE (BASE, 450 FT^3/S).--No peak above base.

NOTE.--No gage-height record June 20-26.

05291000 Whetstone River near Big Stone City, S. Dak.

LOCATION.--Lat 45°17'32", long 96°29'14", in SE¼NW¼ sec.18, T.121 N., R.46 W., Grant County, on right bank 20 ft (6 m) downstream from highway bridge, 1.5 mi (2.4 km) west of Big Stone City, and 4.5 mi (7.2 km) upstream from Big Stone Lake.

DRAINAGE AREA.--389 mi² (1,008 km²).

PERIOD OF RECORD.--March 1910 to November 1912 (no winter records), and March 1931 to current year. Monthly discharge only for some periods, published in WSP 1308.

GAGE.--Water-stage recorder. Datum of gage is 996.96 ft (303.873 m) above mean sea level, adjustment of 1912. Mar. 8, 1910, to Nov. 30, 1912, nonrecording gage 2 mi (3 km) downstream at different datum. Mar. 18, 1931, to May 3, 1939, nonrecording gage, at site 20 ft (6 m) upstream at present datum. May 4, 1939, to Nov. 8, 1952, water-stage recorder at site 80 ft (24 m) downstream at present datum.

AVERAGE DISCHARGE.--44 years (1931-75), 47.1 ft³/s (1.33 m³/s), 1.64 in/yr (42 mm/yr), 34,120 acre-ft/yr (42.1 hm³/yr).

EXTREMES.--Current year: Maximum discharge, 1,000 ft³/s (28.3 m³/s) Apr. 19 (gage height, 6.67 ft or 2.033 m, backwater from ice); minimum daily, 0.79 ft³/s (0.022 m³/s) Jan. 19 to Feb. 14.
Period of record: Maximum discharge, 6,870 ft³/s (195 m³/s) Apr. 8, 1969 (gage height, 14.32 ft or 4.365 m) from floodmark; no flow at times in most years.
Maximum stage known, about 26 ft (8 m) in June 1919, present site and datum, from information by local resident.

REMARKS.--Records good except those for winter periods, which are fair. Records of water-quality data for the current year are published in Section 2 of this report.

REVISIONS (WATER YEARS).--WSP 895: Drainage area. WSP 1308: 1932(M), 1935(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.5	5.3	4.1	4.1	.79	6.1	13	221	10	7.6	1.5	2.0
2	1.6	5.9	4.1	4.0	.79	6.2	13	177	11	6.9	1.8	2.0
3	1.6	5.0	4.1	4.0	.79	6.3	13	156	9.8	6.1	1.6	2.1
4	1.8	4.9	4.0	3.9	.79	6.3	13	133	9.4	5.6	1.5	2.1
5	1.8	4.9	4.0	3.8	.79	6.4	13	115	9.2	5.3	1.5	2.1
6	1.9	4.8	3.9	3.7	.79	6.4	13	93	8.7	4.9	1.5	2.1
7	2.2	4.7	3.8	3.6	.79	6.4	13	81	8.9	4.6	1.5	2.2
8	1.9	4.9	3.8	3.4	.79	6.4	13	73	8.5	4.2	1.5	2.4
9	1.9	4.8	4.0	3.2	.79	6.4	13	66	9.3	3.4	1.5	2.5
10	2.1	4.7	4.2	3.0	.79	6.5	13	62	10	3.3	1.5	2.5
11	2.1	4.5	4.3	2.5	.79	6.5	14	57	10	3.2	1.5	2.4
12	2.2	4.7	4.3	2.0	.79	6.6	25	51	10	3.6	1.5	2.3
13	2.3	4.6	4.3	1.3	.79	6.6	32	45	9.1	3.7	1.5	2.2
14	2.3	4.4	4.3	1.2	.79	6.7	45	41	10	3.4	1.6	2.2
15	2.5	4.4	4.3	1.0	.80	7.0	95	36	15	3.0	1.6	2.1
16	2.6	4.4	4.3	.90	.80	8.0	151	32	17	3.0	1.7	2.0
17	2.7	4.4	4.3	.82	.80	9.5	228	29	21	2.9	2.0	1.9
18	2.5	4.4	4.3	.80	1.0	13	569	27	35	2.6	2.1	1.8
19	2.7	4.4	4.3	.79	1.7	30	899	25	42	2.6	2.6	1.8
20	2.8	4.5	4.3	.79	2.5	69	650	24	39	2.8	2.9	1.7
21	2.7	4.5	4.3	.79	3.5	40	443	21	32	2.5	2.6	1.7
22	2.7	4.4	4.3	.79	4.2	64	411	20	25	2.3	2.4	1.7
23	2.6	4.3	4.3	.79	4.6	55	373	29	20	2.1	2.4	1.7
24	2.9	4.3	4.3	.79	5.0	35	376	29	17	2.1	2.3	1.7
25	3.0	4.2	4.3	.79	5.4	28	348	23	14	2.0	1.7	1.8
26	3.1	4.2	4.3	.79	5.6	21	324	20	13	1.7	1.6	1.7
27	3.0	4.2	4.2	.79	5.8	19	338	17	13	1.5	1.7	2.2
28	3.2	4.1	4.2	.79	6.0	17	374	15	11	1.3	2.3	2.6
29	3.4	4.1	4.2	.79	---	16	303	13	9.7	1.2	2.1	2.4
30	3.5	4.1	4.2	.79	---	15	263	13	8.7	1.2	2.1	2.7
31	4.2	---	4.1	.79	---	14	---	11	---	1.3	2.1	---
TOTAL	77.3	137.0	129.7	57.49	58.76	550.3	6371	1755	466.3	101.9	57.7	62.6
MEAN	2.49	4.57	4.18	1.85	2.10	17.9	212	56.6	15.5	3.29	1.86	2.09
MAX	4.2	5.9	4.3	4.1	6.0	69	899	221	42	7.6	2.9	2.7
MIN	1.5	4.1	3.8	.79	.79	6.1	13	11	8.5	1.2	1.5	1.7
CFSM	.006	.01	.01	.005	.005	.05	.55	.15	.04	.009	.005	.005
IN.	.007	.01	.01	.005	.005	.05	.61	.17	.04	.009	.005	.005
AC-FT	153	272	257	114	117	1100	12640	3480	925	202	114	124

CAL YR 1974 TOTAL 6569.00 MEAN 18.0 MAX 320 MIN 1.5 CFSM .05 IN .63 AC-FT 13030
WTR YR 1975 TOTAL 9831.05 MEAN 26.9 MAX 899 MIN .79 CFSM .07 IN .94 AC-FT 19500

PEAK DISCHARGE (BASE, 200 FT³/S).--Apr. 19 (0200) 1,000 ft³/s (6.67 ft); Apr. 28 (0215) 408 ft³/s (4.58 ft).

05291500 Big Stone Lake at Ortonville, Minn.

LOCATION.--Lat 45°18'18", long 96°26'57", in NW¼SW¼ sec.9, T.121 N., R.46 W., Big Stone County, at powerplant intake at west edge of Ortonville, 0.5 mi (0.8 km) north of concrete dam at outlet, 0.5 mi (0.8 km) southwest of Ortonville.

PERIOD OF RECORD.--March 1937 to current year.

GAGE.--Nonrecording gage read once a day. Datum of gage is 957.69 ft (291.90 m) above mean sea level, datum of 1929. Prior to Sept. 17, 1947, nonrecording gage at site 0.5 mi (0.8 km) south at same datum. Sept. 18, 1947, to June 30, 1963, water-stage recorder at site 0.5 mi (0.8 km) south at same datum. Sept. 21, 1959, to June 30, 1963, supplementary nonrecording gage read once daily, at present site and datum.

EXTREMES.--Current year: Maximum gage height observed, 8.05 ft (2.454 m) May 1; minimum observed, 5.40 ft (1.646 m) Oct. 21.

Period of record: Maximum gage height, 12.73 ft (3.880 m) Apr. 17, 1952; minimum observed, 3.53 ft (1.076 m) Mar. 2, 1957 (strong upstream wind in channel). Minimum observations of 3.10 ft (0.945 m) Mar 2, 1940 and 2.20 ft (0.671 m) Nov. 20, 1940 at spillway site are the result of blockage of channel to spillway by ice and snow and do not represent lake elevations.

REMARKS.--Natural lake with concrete dam at outlet. Fixed crest of dam is at 5.95 ft (1.814 m), with one 5 ft (1.5 m) and two 2.5 ft (0.76 m) gates with lowest sill at 0.71 ft (0.22 m).

Silt barrier dam 700 ft (213 m) upstream in outlet channel of lake completed July 7, 1958; crest at 5.9 ft (1.80 m). Supplementary nonrecording gage readings used for stages below crest of silt barrier to June 30, 1963. Water level subject to fluctuation caused by wind action.

GAGE HEIGHT, IN FEET, OCTOBER 1974 TO SEPTEMBER 1975

Oct. 31	5.65	Feb. 28	6.05	June 30	7.43
Nov. 30	5.70	Mar. 31	6.45	July 31	6.67
Dec. 31	5.79	Apr. 30	8.00	Aug. 31	6.40
Jan. 31	6.01	May 31	7.25	Sept. 30	6.45

NOTE.--Gage-height record other than that shown above is available.

05292000 Minnesota River at Ortonville, Minn.

LOCATION.--Lat 45°17'44", long 96°26'38", in NE¼NW¼ sec.16, T.121 N., R.46 W., Big Stone County, on left bank 400 ft (122 m) downstream from bridge on U.S. Highway 12 and 1,300 ft (396 m) downstream from dam at outlet of Big Stone Lake, at Ortonville.

DRAINAGE AREA.--1,160 mi² (3,000 km²), approximately.

PERIOD OF RECORD.--February 1938 to current year.

GAGE.--Water-stage recorder. Datum of gage is 956.38 ft (291.505 m) above mean sea level, datum of 1929. Prior to Mar. 31, 1939, nonrecording gage on downstream side of dam 1,300 ft (396 m) upstream at datum 1.31 ft (0.40 m) higher.

AVERAGE DISCHARGE.--37 years, 110 ft³/s (3.12 m³/s), 79,700 acre-ft/yr (98.3 hm³/yr).

EXTREMES.--Current year: Maximum discharge, 715 ft³/s (20.2 m³/s) Apr. 29 (gage height, 7.94 ft or 2.420 m); minimum, 0.58 ft³/s (0.016 m³/s) Sept. 29 (gage height, 1.06 ft or 0.323 m).
Period of record: Maximum discharge, 3,060 ft³/s (86.7 m³/s) Apr. 13, 1952 (gage height, 12.92 ft or 3.938 m); no flow Dec. 13, 1940.

REMARKS.--Records good except those for winter periods, which are fair. Some regulation by Big Stone Lake (See preceding page).

REVISIONS (WATER YEARS).--WSP 895: 1939. WSP 1508: 1942 (yearly mean).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.0	4.4	5.4	4.5	4.1	4.4	5.1	605	5.3	13	5.6	2.8
2	2.0	2.3	5.3	4.5	4.1	4.4	5.2	576	5.1	20	5.2	2.8
3	2.4	2.1	5.1	4.5	4.1	4.5	5.2	558	4.0	27	4.8	2.8
4	2.2	2.0	5.2	4.4	4.1	4.4	5.2	526	5.9	17	4.6	2.5
5	2.3	2.0	5.2	4.3	4.1	4.4	5.1	486	6.0	25	4.5	2.5
6	2.7	1.9	5.0	4.2	4.0	4.4	5.3	378	4.0	29	4.2	2.3
7	4.0	1.9	5.3	4.1	3.8	4.4	6.4	376	2.7	23	3.7	2.2
8	4.7	1.9	5.2	4.0	3.9	4.4	8.5	453	2.7	24	3.6	2.1
9	3.1	2.0	5.0	4.0	3.9	4.4	5.7	488	3.4	22	3.5	1.8
10	2.4	2.1	5.1	4.0	3.9	4.4	6.1	450	3.0	15	3.4	2.0
11	2.8	2.1	5.0	4.0	3.9	4.4	7.3	484	2.8	17	3.2	2.1
12	3.8	2.1	5.1	4.0	3.9	4.4	9.0	414	3.1	7.4	3.4	1.8
13	2.8	2.0	5.2	4.0	4.0	4.4	11	376	4.3	7.0	3.0	1.8
14	3.2	2.1	5.3	4.0	4.0	4.5	9.7	450	14	6.5	2.8	1.7
15	2.4	2.0	5.3	4.0	4.0	4.5	7.7	347	7.3	5.0	2.8	1.6
16	2.1	1.9	5.4	4.0	4.1	4.5	6.3	278	2.2	4.6	2.9	1.8
17	2.0	2.0	5.3	4.0	4.1	5.1	8.1	297	14	4.9	3.0	1.5
18	1.7	2.0	5.3	4.0	4.1	5.9	65	300	2.7	5.2	3.0	1.6
19	1.7	2.0	5.3	4.0	4.2	8.1	75	291	3.5	4.8	3.4	1.9
20	1.5	3.2	5.3	4.1	4.3	7.9	23	246	6.6	4.8	3.4	1.9
21	1.6	3.1	4.7	4.1	4.3	5.7	16	204	11	5.1	3.4	1.6
22	2.3	5.6	4.7	4.1	4.4	5.1	28	94	20	6.7	3.4	1.5
23	2.4	5.7	4.8	4.1	4.4	4.8	55	9.1	13	5.3	3.4	1.1
24	2.0	5.3	4.7	4.1	4.4	4.6	208	6.6	15	5.6	3.4	.80
25	2.1	5.2	4.5	4.1	4.4	4.6	340	15	12	5.1	3.4	.80
26	2.1	5.2	4.6	4.1	4.4	4.5	332	17	25	5.2	3.4	.82
27	2.2	5.4	4.6	4.1	4.4	4.5	411	4.6	23	5.0	3.0	.90
28	2.0	5.3	4.5	4.1	4.4	4.6	473	3.0	13	5.2	3.4	.76
29	2.0	5.3	4.5	4.1	---	4.8	615	12	22	5.4	2.8	.71
30	2.1	5.3	4.6	4.1	---	4.9	649	9.4	21	5.3	2.5	.90
31	3.3	---	4.6	4.1	---	5.0	---	5.7	---	5.3	2.5	---
TOTAL	75.9	95.4	155.1	127.7	115.7	150.9	3404.9	8734.4	277.6	341.4	108.8	51.39
MEAN	2.45	3.18	5.00	4.12	4.13	4.87	113	282	9.25	11.0	3.51	1.71
MAX	4.7	5.7	5.4	4.5	4.4	8.1	649	605	25	29	5.6	2.8
MIN	1.5	1.9	4.5	4.0	3.8	4.4	5.1	3.0	2.2	4.6	2.5	.71
AC-FT	151	189	308	253	229	299	6750	17330	551	677	216	102

CAL YR 1974 TOTAL 7857.00 MEAN 21.5 MAX 335 MIN .82 AC-FT 15580
WTR YR 1975 TOTAL 13644.19 MEAN 37.4 MAX 649 MIN .71 AC-FT 27060

05293000 Yellow Bank River near Odessa, Minn.

LOCATION.--Lat 45°13'35", long 96°21'12", in SE¼SE¼ sec.1, T.120 N., R.46 W., Lac qui Parle County, on left bank 150 ft (46 m) downstream from highway bridge, 2.5 mi (4.0 km) southwest of Odessa, and 4.5 mi (7.2 km) upstream from mouth.

DRAINAGE AREA.--398 mi² (1,031 km²).

PERIOD OF RECORD.--October 1939 to current year.

GAGE.--Water-stage recorder. Datum of gage is 953.34 ft (290.578 m) above mean sea level, datum of 1929 (corps of Engineers bench mark). Prior to Aug. 28, 1940, nonrecording gage at site 150 ft (46 m) upstream at same datum.

AVERAGE DISCHARGE.--36 years, 58.1 ft³/s (1.65 m³/s), 1.98 in/yr (50 mm/yr), 42,090 acre-ft/yr (51.9 hm³/yr).

EXTREMES.--Current year: Maximum discharge, 660 ft³/s (18.7 m³/s) Apr. 20 (gage height, 5.65 ft or 1.722 m); minimum discharge, 0.14 ft³/s (0.004 m³/s) Sept. 26, 27; minimum gage height, 1.39 ft (0.424 m) Aug. 13, 14.
Period of record: Maximum discharge, 6,970 ft³/s (197 m³/s) Apr. 9, 1969 (gage height, 19.07 ft or 5.813 m, from floodmark); no flow Jan. 26 to Feb. 8, 1940, Jan. 8, 9, 1942, Jan. 25 to Feb. 25, 1959, Feb. 11 to Mar. 9, 1965.

REMARKS.--Records good except those for winter periods, which are fair. Records of water-quality data for the current year are published in Section 2 of this report.

REVISIONS (WATER YEARS).--WSP 1388: 1947(M), 1950.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.45	5.6	2.6	2.7	2.7	2.8	58	221	17	7.9	.79	.57
2	.48	3.1	2.8	2.8	2.7	2.8	57	189	16	7.0	1.2	.41
3	.44	2.5	2.8	2.8	2.7	2.8	56	166	15	6.1	1.0	.33
4	.47	1.9	2.7	2.8	2.7	2.8	56	147	14	5.4	.66	.35
5	.59	1.6	2.6	2.8	2.7	2.8	56	127	13	4.9	.66	.44
6	.65	2.0	2.4	2.8	2.7	2.5	57	114	12	4.5	1.8	.43
7	.62	2.8	2.3	2.8	2.7	2.3	59	102	12	4.1	1.0	.40
8	.51	3.0	2.2	2.8	2.7	2.4	62	92	11	3.8	.53	.41
9	.54	3.1	2.1	2.8	2.7	2.5	75	84	12	3.6	.48	.41
10	.55	3.1	2.1	2.8	2.7	2.6	82	75	12	3.2	.49	.51
11	.59	3.1	2.2	2.3	2.7	2.6	98	68	12	3.2	.49	.51
12	.54	3.1	2.3	2.0	2.7	2.6	106	63	12	3.7	.42	.37
13	.49	3.0	2.5	2.1	2.7	2.6	108	59	14	3.5	.33	.30
14	.38	3.0	2.7	2.4	2.7	2.6	99	55	15	3.2	.23	.29
15	.37	2.9	2.8	2.5	2.7	2.8	84	51	21	2.8	.31	.26
16	.31	2.8	2.8	2.6	2.7	3.4	87	48	18	2.5	.45	.19
17	.31	2.8	2.8	2.6	2.7	5.0	97	43	18	2.1	.72	.20
18	.28	2.8	2.7	2.6	2.7	7.2	210	39	24	2.1	.83	.29
19	.30	2.7	2.8	2.6	2.7	18	474	38	24	2.4	.80	.32
20	.30	2.7	2.5	2.6	2.7	38	612	36	25	3.2	.98	.30
21	1.3	2.7	2.5	2.6	2.7	110	490	36	25	3.6	.77	.37
22	2.6	2.7	2.4	2.6	2.7	92	382	45	21	3.2	.66	.37
23	1.3	2.7	2.4	2.6	2.7	80	349	38	19	5.3	.50	.32
24	.84	2.7	2.3	2.7	2.8	75	342	37	16	3.5	.43	.25
25	.90	2.7	2.3	2.7	2.9	73	343	32	16	3.2	.33	.23
26	.77	2.8	2.3	2.7	2.9	72	310	30	15	2.3	.32	.17
27	.98	2.8	2.3	2.7	2.9	72	313	27	14	2.1	.31	.24
28	1.5	2.8	2.3	2.7	2.8	72	320	25	11	1.7	1.3	.33
29	2.6	2.8	2.4	2.7	---	68	295	22	9.8	1.1	.89	.30
30	1.8	2.8	2.5	2.7	---	65	258	20	8.7	.86	.81	.34
31	3.3	---	2.7	2.7	---	60	---	18	---	.66	.71	---
TOTAL	26.62	85.1	77.1	81.6	76.4	950.1	5995	2147	474.5	106.72	21.20	10.21
MEAN	.86	2.84	2.49	2.63	2.73	30.6	200	69.3	15.8	3.44	.68	.34
MAX	3.3	5.6	2.8	2.8	2.9	110	612	221	25	7.9	1.8	.57
MIN	.28	1.6	2.1	2.0	2.7	2.3	56	18	8.7	.66	.23	.17
CFSM	.002	.007	.006	.007	.007	.08	.50	.17	.04	.009	.002	.0009
IN.	.002	.007	.007	.007	.007	.09	.56	.20	.04	.009	.001	0
AC-FT	53	169	153	162	152	1880	11890	4260	941	212	42	20

CAL YR 1974 TOTAL 5856.58 MEAN 16.0 MAX 163 MIN .19 CFSM .04 IN .55 AC-FT 11620
WTR YR 1975 TOTAL 10051.55 MEAN 27.5 MAX 612 MIN .17 CFSM .07 IN .94 AC-FT 19940

PEAK DISCHARGE (BASE, 300 FT³/S).--Apr. 20 (0230) 660 ft³/s (5.65 ft).

05294000 Pomme de Terre River at Appleton, Minn.

LOCATION.--Lat 45°12'10", long 96°01'20", in SW¼NW¼ sec.14, T.120 N., R.43 W., Swift County, on left bank 60 ft (18 m) upstream from bridge on U.S. Highway 59 and State Highway 119 at Appleton and 8 mi (13 km) upstream from mouth.

DRAINAGE AREA.--905 mi² (2,344 km²), approximately.

PERIOD OF RECORD.--March 1931 to September 1935 (no winter records), October 1935 to current year. Prior to October 1953, published as "near Appleton."

GAGE.--Water-stage recorder and concrete control. Datum of gage is 978.00 ft (298.094 m) above mean sea level, datum of 1929. Prior to Dec. 22, 1952, nonrecording gage at site 4 mi (6 km) upstream at datum 25.17 ft (7.672 m) higher.

AVERAGE DISCHARGE.--40 years (1935-75), 105 ft³/s (2.95 m³/s), 1.58 in/yr (40 mm/yr), 76,070 acre-ft/yr (93.8 hm³/yr).

EXTREMES.--Current year: Maximum discharge, 1,100 ft³/s (31.2 m³/s) Apr. 19 (gage height, 7.14 ft or 2.176 m); minimum, 1.0 ft³/s (0.028 m³/s) Feb. 10 (gage height, 3.02 ft or 0.920 m).
Period of record: Maximum discharge, 5,520 ft³/s (156 m³/s) Apr. 11, 1969 (gage height, 13.78 ft or 4.200 m); maximum gage height, 14.58 ft (4.444 m) Apr. 9, 1969 (backwater from ice); no flow for several periods.

REMARKS.--Records good. Flow affected by lakes above station. Occasional regulation at low flow by old milldam 500 ft (152 m) upstream.

REVISIONS (WATER YEARS).--WSP 1308: 1931(M), 1937(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	27	32	21	1.2	1.4	37	745	185	536	113	91
2	18	34	30	20	1.2	1.3	39	713	176	696	110	85
3	18	32	28	19	1.2	1.3	39	666	168	793	112	78
4	18	33	27	20	1.2	1.3	40	629	160	726	114	78
5	19	32	27	20	1.2	1.4	42	613	154	636	103	76
6	20	32	26	21	1.2	1.4	42	583	151	584	100	70
7	20	31	27	21	1.2	1.4	46	534	143	560	94	66
8	18	31	22	21	1.2	1.4	50	501	138	531	86	64
9	19	30	19	21	1.1	1.3	52	476	139	501	80	61
10	20	30	17	18	1.1	1.3	54	451	136	470	77	58
11	19	30	22	9.1	1.1	1.4	59	429	141	435	75	56
12	19	30	25	4.7	1.1	1.4	69	405	139	405	73	54
13	15	30	26	2.9	1.1	1.4	84	386	134	375	70	53
14	16	19	27	1.4	1.1	1.4	109	369	136	345	68	53
15	16	19	27	1.4	1.1	1.4	207	354	194	320	65	51
16	17	35	26	1.4	1.1	1.4	559	341	252	296	64	49
17	17	39	25	1.4	1.2	1.5	829	321	218	282	65	48
18	18	33	24	1.3	1.2	1.6	942	305	219	267	64	49
19	17	40	26	1.3	1.2	1.8	1040	300	221	244	63	49
20	15	37	27	1.3	1.2	1.9	970	290	253	230	75	50
21	14	26	25	1.3	1.3	2.5	881	279	474	213	163	50
22	14	30	25	1.3	1.3	6.5	791	284	619	200	122	51
23	13	42	24	1.3	1.3	10	743	299	644	198	102	52
24	15	25	23	1.3	1.3	14	737	294	601	194	95	52
25	14	24	21	1.3	1.3	17	733	275	633	179	86	49
26	13	30	21	1.3	1.3	20	720	258	615	164	82	48
27	14	33	21	1.3	1.3	30	754	243	546	154	80	47
28	15	30	21	1.3	1.3	29	743	231	517	144	129	47
29	16	29	22	1.2	---	28	721	225	513	135	148	47
30	17	30	22	1.2	---	27	730	213	486	127	115	48
31	21	---	22	1.2	---	27	---	201	---	118	100	---
TOTAL	521	923	757	242.2	33.6	239.7	12922	12213	9105	11056	2893	1728
MEAN	16.8	30.8	24.4	7.81	1.20	7.73	431	394	304	357	93.3	57.6
MAX	21	42	32	21	1.3	30	1040	745	644	793	163	91
MIN	13	19	17	1.2	1.1	1.3	37	201	134	118	63	47
CFSM	.02	.03	.03	.009	.001	.009	.48	.44	.34	.39	.10	.06
IN.	.02	.04	.03	.009	.001	.009	.53	.50	.37	.45	.12	.07
AC-FT	1030	1830	1500	480	67	475	25630	24220	18060	21930	5740	3430

CAL YR 1974 TOTAL 20938.0 MEAN 57.4 MAX 180 MIN 13 CFSM .06 IN .86 AC-FT 41530
WTR YR 1975 TOTAL 52635.5 MEAN 144 MAX 1040 MIN 1.1 CFSM .16 IN 2.16 AC-FT 104400

PEAK DISCHARGE (BASE, 200 FT³/S)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
4-19	1700	7.14	1,100	6-23	0315	6.48	654
6-16	0715	5.61	264	7-3	1145	6.76	820

05300000 Lac qui Parle River near Lac qui Parle, Minn.

LOCATION.--Lat 44°59'42", long 95°55'09", in SW¼SW¼ sec.27, T.118 N., R.42 W., Lac qui Parle County, on right bank 40 ft (12 m) downstream from highway bridge and 0.5 mi (0.8 km) southwest of village of Lac qui Parle.

DRAINAGE AREA.--983 mi² (2,546 km²).

PERIOD OF RECORD.--April 1910 to November 1914; March 1931 to current year (winter records incomplete prior to 1934). Published as "at Lac qui Parle," 1910-14.

GAGE.--Water-stage recorder. Datum of gage is 951.98 ft (290.164 m) above mean sea level (Minnesota Highway Department bench mark). Apr. 27, 1910, to Nov. 15, 1914, nonrecording gage at site 2 mi (3 km) downstream at different datum. Mar. 17, 1931, to Mar. 9, 1937, nonrecording gage at site 40 ft (12 m) upstream at present datum.

AVERAGE DISCHARGE.--44 years (1912-13, 1931-32, 1933-75), 121 ft³/s (3.43 m³/s), 1.67 in/yr (42 mm/yr), 87,660 acre-ft/yr (108 hm³/yr).

EXTREMES.--Current year: Maximum discharge, 1,250 ft³/s (35.4 m³/s) Apr. 20 (gage height, 5.02 ft or 1.530 m); no flow Oct. 1-4.

Period of record: Maximum discharge, 17,100 ft³/s (484 m³/s) Apr. 10, 1969 (gage height, 18.94 ft or 5.773 m, from floodmark); maximum gage height, 19.37 ft (5.904 m) Apr. 9, 1965, from floodmark, backwater from ice; no flow at times in several years.

REMARKS.--Records good except those for winter periods, which are fair.

REVISIONS (WATER YEARS).--WSP 1308: 1912(M), 1935(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	4.7	2.8	2.3	3.2	4.0	26	463	38	18	.37	2.1
2	0	3.8	2.9	2.3	3.3	4.0	35	396	36	13	.49	.97
3	0	3.4	2.8	2.3	3.4	4.1	29	346	33	9.2	1.0	.96
4	0	2.9	2.8	2.3	3.6	4.1	25	303	32	7.1	2.2	.95
5	.02	2.7	2.8	2.3	3.7	4.1	23	269	30	4.9	2.3	.95
6	1.7	2.5	2.8	2.3	3.8	4.1	21	239	27	2.9	2.0	.94
7	2.1	2.5	2.8	2.3	4.0	4.1	20	211	25	1.4	1.8	.93
8	2.3	2.6	2.7	2.3	4.0	4.0	19	189	25	1.4	1.7	.92
9	2.5	2.6	2.7	2.2	4.0	4.0	18	169	29	1.3	1.6	.92
10	2.5	2.6	2.7	2.2	4.0	4.0	18	157	29	1.3	1.6	1.0
11	3.0	2.6	2.6	2.1	4.0	4.0	18	147	28	1.2	1.5	1.5
12	3.2	2.5	2.6	2.1	4.0	3.7	20	136	29	1.2	1.5	1.0
13	3.7	2.4	2.5	2.1	4.0	3.7	25	127	28	1.2	1.4	.98
14	3.4	2.4	2.5	2.1	4.0	3.7	32	118	31	1.1	1.4	.94
15	3.2	2.4	2.5	2.1	4.0	3.7	41	108	58	1.1	1.3	.94
16	3.7	2.4	2.5	2.2	4.0	4.0	76	99	62	1.0	1.3	.94
17	3.0	2.3	2.4	2.2	4.0	6.0	210	91	66	.98	1.3	.93
18	2.7	2.4	2.4	2.3	4.0	9.0	440	85	74	.94	1.2	.95
19	2.7	2.5	2.4	2.3	4.0	13	815	83	76	.90	1.2	.95
20	3.0	2.5	2.4	2.3	4.0	17	972	76	76	.86	1.1	.92
21	3.2	2.5	2.4	2.4	4.0	20	798	82	81	.83	1.1	.90
22	2.7	2.5	2.4	2.4	4.0	19	583	77	71	.80	1.0	.90
23	3.0	2.4	2.4	2.5	4.0	17	517	76	59	.78	1.0	.90
24	3.0	2.4	2.4	2.5	4.0	15	526	75	51	.77	.98	.76
25	2.5	2.4	2.4	2.6	4.0	13	631	72	46	.72	.96	.67
26	3.0	2.4	2.4	2.7	4.0	12	670	70	39	.65	.96	.59
27	3.2	2.5	2.4	2.8	4.0	12	612	61	33	.57	.96	.52
28	3.4	2.5	2.3	2.9	4.0	12	583	55	27	.51	2.8	.45
29	3.7	2.6	2.3	3.0	---	13	567	51	23	.46	4.7	.40
30	3.2	2.7	2.3	3.0	---	14	538	45	21	.39	5.7	.37
31	3.2	---	2.3	3.1	---	16	---	42	---	.34	3.4	---
TOTAL	76.82	79.6	78.6	74.5	109.0	271.3	8908	4518	1283	77.80	51.82	27.15
MEAN	2.48	2.65	2.54	2.40	3.89	8.75	297	146	42.8	2.51	1.67	.91
MAX	3.7	4.7	2.9	3.1	4.0	20	972	463	81	18	5.7	2.1
MIN	0	2.3	2.3	2.1	3.2	3.7	18	42	21	.34	.37	.37
CFSM	.003	.003	.003	.002	.004	.009	.30	.15	.04	.003	.002	.0009
IN.	.003	.003	.003	.003	.004	.01	.34	.17	.05	.003	.002	.001
AC-FT	152	158	156	148	216	538	17670	8960	2540	154	103	54

CAL YR 1974 TOTAL 11624.88 MEAN 31.8 MAX 404 MIN 0 CFSM .03 IN .44 AC-FT 23060
WTR YR 1975 TOTAL 15555.59 MEAN 42.6 MAX 972 MIN 0 CFSM .04 IN .59 AC-FT 30850

05301000 Minnesota River near Lac qui Parle, Minn.

LOCATION.--Lat 45°01'17", long 95°52'05", in NW¼NE¼ sec.24, T.118 N., R.42 W., Chippewa County, on left bank 200 ft (61 m) downstream from dam at Lac qui Parle Outlet, 2.4 mi (3.9 km) northeast of village of Lac qui Parle, and 3.5 mi (5.6 km) west of Watson.

DRAINAGE AREA.--4,050 mi² (10,500 km²), approximately.

PERIOD OF RECORD.--October 1942 to current year.

GAGE.--Water-stage recorder. Datum of gage is 900.00 ft (274.320 m) above mean sea level, datum of 1929 (levels by Corps of Engineers). Prior to Nov. 10, 1944, at datum 0.20 ft (0.061 m) lower.

AVERAGE DISCHARGE.--33 years, 638 ft³/s (18.1 m³/s), 462,200 acre-ft/yr (570 hm³/yr).

EXTREMES.--Current year: Maximum discharge, 2,080 ft³/s (58.9 m³/s) Apr. 28 (gage height, 28.21 ft or 8.598 m); minimum, 8.6 ft³/s (0.244 m³/s) Oct. 12, 15, 20 (gage height, 20.20 ft or 6.157 m).
Period of record: Maximum discharge, 29,400 ft³/s (833 m³/s) Apr. 12, 1969 (gage height, 39.75 ft or 12.116 m); no flow Nov. 17, 1942, Sept. 29, 1947, Oct. 19 to Nov. 18, 1951, Nov. 24, 1952.

REMARKS.--Records good. Part of flow from 2,050 mi² (5,310 km²) of Chippewa River basin at times diverted into Minnesota River above station. Some regulation by Big Stone Lake since Apr. 17, 1937, Lac qui Parle since January 1938, Marsh Lake since Nov. 1, 1939, and Odessa Dam since May 1974.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.6	12	308	22	165	74	205	1780	1060	945	204	67
2	10	12	363	22	158	73	201	1600	1070	929	201	67
3	11	12	442	22	184	73	203	1730	1170	916	201	67
4	12	12	378	22	206	75	201	1800	1170	916	197	66
5	12	12	185	23	216	74	200	1560	1180	908	197	66
6	9.4	13	137	23	215	73	200	1560	1090	904	197	67
7	9.4	13	136	23	211	74	198	1610	989	900	193	67
8	13	13	222	23	210	75	198	1700	906	903	158	67
9	12	13	88	40	220	75	195	1750	865	902	76	67
10	14	13	20	53	217	68	194	1780	1080	786	76	68
11	14	15	20	55	220	57	195	1800	1320	602	76	68
12	9.6	14	20	57	218	56	193	1790	1260	710	76	68
13	9.6	15	20	79	221	58	196	1780	1170	665	76	69
14	9.0	15	20	107	217	58	193	1800	1110	596	75	69
15	8.6	14	20	100	211	58	195	1750	1110	430	75	70
16	11	14	20	96	209	60	207	1680	1060	394	73	70
17	11	14	20	93	208	60	221	1650	1050	309	74	70
18	10	15	20	90	203	60	411	1640	1040	306	73	70
19	9.9	16	21	89	204	61	928	1620	1020	307	72	71
20	9.6	18	21	113	202	61	1370	1600	1010	304	72	70
21	11	18	22	134	199	62	1540	1600	999	305	71	70
22	11	18	22	134	196	63	1650	1540	993	302	71	70
23	11	19	21	196	193	62	1790	1490	973	300	70	70
24	9.4	19	22	185	173	100	1830	1450	966	295	70	71
25	9.4	18	22	167	136	138	1960	1420	964	295	71	71
26	9.4	20	22	168	136	134	1990	1390	957	292	70	71
27	9.4	41	22	167	135	173	2020	1300	964	292	71	71
28	9.9	88	22	168	102	209	1900	1240	965	291	70	70
29	9.9	176	21	167	---	203	1560	1420	967	288	69	70
30	9.4	323	22	168	---	207	1760	1510	963	261	69	71
31	9.9	---	22	169	---	205	---	1150	---	203	68	---
TOTAL	324.4	1017	2721	2975	5385	2879	24104	49490	31441	16756	3212	2069
MEAN	10.5	33.9	87.8	96.0	192	92.9	803	1596	1048	541	104	69.0
MAX	14	323	442	196	221	209	2020	1800	1320	945	204	71
MIN	8.6	12	20	22	102	56	193	1150	865	203	68	66
AC-FT	643	2020	5400	5900	10680	5710	47810	98160	62360	33240	6370	4100

CAL YR 1974 TOTAL 80866.1 MEAN 222 MAX 1020 MIN 2.9 AC-FT 160400
WTR YR 1975 TOTAL 142373.4 MEAN 390 MAX 2020 MIN 8.6 AC-FT 282400

05304500 Chippewa River near Milan, Minn.

LOCATION.--Lat 45°06'39", long 95°47'57", in SE¼SE¼ sec.16, T.119 N., R.41 W., Chippewa County, on right bank 800 ft (240 m) upstream from bridge on State Highway 40, 2.0 mi (3.2 km) upstream from small tributary, and 5.5 mi (8.8 km) east of Milan.

DRAINAGE AREA.--1,870 mi² (4,840 km²), approximately.

PERIOD OF RECORD.--March 1937 to current year.

GAGE.--Water-stage recorder. Datum of gage is 959.69 ft (292.514 m) above mean sea level, datum of 1929. Prior to June 15, 1942, nonrecording gage on bridge 800 ft (240 m) downstream at same datum.

AVERAGE DISCHARGE.--38 years, 266 ft³/s (7.53 m³/s), 1.93 in/yr (49 mm), 192,700 acre-ft/yr (238 hm³/yr).

EXTREMES.--Current year: Maximum discharge, 2,820 ft³/s (79.9 m) Apr. 29 (gage height, 6.70 ft or 2.042 m); maximum gage height, 7.85 ft (2.393 m) Apr. 19 (backwater from ice); minimum daily discharge, 8.2 ft³/s (0.23 m³/s) Jan. 16-19.

Period of Record: Maximum discharge, 11,400 ft³/s (323 m³/s) Apr. 9, 1969 (gage height, 15.45 ft or 4.709 m); no flow at times during 1940.

REMARKS.--Records good except those for winter periods, which are fair. Flow regulated by several small lakes above gage. Records of water-quality data for the current year are published in Section 2 of this report.

REVISIONS (WATER YEARS).--WSP 1145: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	58	42	36	9.4	15	45	2360	687	1170	249	237
2	27	71	47	35	9.4	15	46	2250	645	1240	243	213
3	28	80	47	34	9.5	15	47	2130	616	1050	246	202
4	32	77	46	34	9.5	15	48	2000	587	961	252	193
5	35	76	46	33	9.6	15	50	1870	547	904	228	188
6	39	70	46	33	9.6	15	54	1740	515	892	219	188
7	39	70	45	32	9.7	15	58	1650	484	884	210	183
8	40	77	45	32	9.8	15	64	1580	462	842	200	176
9	41	78	45	31	9.9	15	72	1500	447	809	191	173
10	43	78	46	30	10	15	86	1440	428	755	181	168
11	40	73	46	25	10	15	104	1380	426	689	174	161
12	37	69	45	17	10	15	140	1300	412	639	169	154
13	35	64	44	11	11	15	220	1250	401	603	161	150
14	28	49	43	9.4	11	16	350	1200	397	564	156	147
15	30	48	42	8.4	11	17	981	1150	467	534	153	141
16	27	50	41	8.2	11	19	1400	1110	574	502	154	138
17	30	58	40	8.2	12	22	1620	1070	582	468	164	134
18	32	55	39	8.2	12	25	1660	1020	547	442	154	138
19	30	54	38	8.2	12	30	1680	990	534	416	149	141
20	31	48	37	8.6	13	35	1720	955	546	396	171	150
21	32	42	37	8.8	13	39	1750	937	599	382	217	145
22	28	39	36	9.0	14	40	1740	906	740	371	222	145
23	32	44	36	9.0	14	41	1990	902	841	365	211	136
24	30	42	36	9.0	14	42	2050	889	1020	340	201	132
25	31	40	37	9.0	14	42	1910	875	1380	326	187	130
26	31	44	37	9.1	14	43	1890	860	1290	312	175	123
27	28	42	37	9.2	14	43	1890	830	1190	299	164	123
28	29	44	38	9.2	14	44	2190	810	1130	286	212	119
29	32	43	37	9.3	---	44	2740	784	1050	280	251	117
30	34	42	37	9.4	---	44	2510	745	997	268	273	110
31	35	---	37	9.4	---	45	---	718	---	255	269	---
TOTAL	1007	1723	1275	542.6	320.4	826	31105	39201	20541	18244	6206	4655
MEAN	32.5	57.4	41.1	17.5	11.4	26.6	1037	1265	685	589	200	155
MAX	43	80	47	36	14	45	2740	2360	1380	1240	273	237
MIN	21	39	36	8.2	9.4	15	45	718	397	255	149	110
CFSM	.02	.03	.02	.009	.006	.01	.55	.68	.37	.31	.11	.08
IN.	.02	.03	.03	.01	.006	.02	.62	.78	.41	.36	.12	.09
AC-FT	2000	3420	2530	1080	636	1640	61700	77760	40740	36190	12310	9230

CAL YR 1974 TOTAL 51917.0 MEAN 142 MAX 572 MIN 20 CFSM .08 IN 1.03 AC-FT 103000
WTR YR 1975 TOTAL 125646.0 MEAN 344 MAX 2740 MIN 8.2 CFSM .18 IN 2.50 AC-FT 249200

PEAK DISCHARGE (BASE, 400 FT³/S)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
4-29	1815	6.70	2,820	7-2	0330	4.53	1,300
6-25	1130	4.76	1,420				

05311000 Minnesota River at Montevideo, Minn.

LOCATION.--Lat 44°56'00, long 95°44'00", in NW¼NW¼ sec.19, T.117 N., R.40 W., Lac qui Parle County, on right bank 100 ft (30 m) upstream from bridge on U.S. Highway 212, at Montevideo, and 400 ft (122 m) downstream from Chippewa River.

DRAINAGE AREA.--6,180 mi^2 (16,000 km^2), approximately.

PERIOD OF RECORD.--July 1909 to September 1917, October 1917 to September 1929 (no winter records), October 1929 to current year. Prior to October 1939, published as "near Montevideo." Monthly discharge only for some periods, published in WSP 1308.

GAGE.--Water-stage recorder. Datum of gage is 909.12 ft (277.100 m) above mean sea level, datum of 1929. July 22, 1909, to Feb. 4, 1932, nonrecording gage at bridge 600 ft (183 m) downstream at present datum. Feb. 5, 1932, to Nov. 26, 1934, nonrecording gage at bridge 100 ft (30 m) downstream at present datum.

AVERAGE DISCHARGE.--54 years (1909-17, 1929-75), 679 ft^3/s (19.23 m^3/s), 491,900 acre-ft/yr (607 hm^3/yr).

EXTREMES.--Current year: Maximum discharge, 2,990 ft^3/s (84.7 m^3/s) Apr. 28 (gage height, 10.15 ft or 3.094 m); minimum, 23 ft^3/s (0.65 m^3/s) Oct. 15 (gage height, 1.10 ft or 0.335 m).
Period of record: Maximum discharge, 35,100 ft^3/s (994 m^3/s) Apr. 12, 1969 (gage height, 21.68 ft or 6.608 m, from high-water mark); no flow for several days in 1933-34, 1936.

REMARKS.--Records good except those for winter periods, which are fair. Flow regulated by Big Stone Lake since Apr. 17, 1937, Lac qui Parle since January 1938 and Marsh Lake since Nov. 1, 1939. Records of water-quality data for the current year are published in Section 2 of this report.

REVISIONS (WATER YEARS).--WSP 1035: 1919(M). WSP 1085: 1935-36. WSP 1508: 1912, 1925(M), 1929(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	35	350	40	170	120	230	2750	1750	1580	332	146
2	27	34	330	40	165	87	230	2510	1680	1570	346	145
3	29	35	454	40	171	84	230	2550	1780	1570	341	143
4	29	35	280	40	200	84	229	2620	1760	1540	340	142
5	28	34	160	41	225	83	228	2190	1790	1510	337	142
6	31	33	160	42	228	84	228	2120	1710	1490	333	142
7	30	33	160	42	226	84	228	2310	1560	1480	332	143
8	28	34	160	43	225	84	227	2390	1450	1480	328	142
9	30	34	230	44	226	84	227	2520	1380	1480	222	143
10	31	35	100	60	229	84	226	2590	1440	1450	160	146
11	31	34	50	70	232	70	225	2620	1760	1160	154	147
12	30	34	45	85	234	55	224	2620	1760	1230	154	142
13	29	34	42	75	234	50	223	2580	1680	1230	151	142
14	25	32	40	90	234	51	222	2560	1590	1190	151	144
15	25	32	39	110	230	52	220	2550	1590	998	147	145
16	26	32	38	105	228	52	220	2450	1550	945	143	145
17	31	32	38	103	225	52	250	2380	1530	799	142	148
18	32	32	38	100	222	53	320	2360	1520	628	143	164
19	32	32	38	98	220	53	972	2320	1510	611	144	149
20	32	32	38	97	216	54	1540	2290	1490	604	145	148
21	34	32	38	125	213	54	1930	2280	1480	602	143	147
22	32	32	38	143	210	55	1830	2250	1480	602	143	146
23	33	32	39	210	207	56	2250	2190	1480	595	143	145
24	32	32	39	190	200	58	2530	2130	1530	591	143	144
25	33	32	39	180	180	100	2680	2080	1570	583	137	142
26	33	33	39	172	156	120	2780	2060	1620	542	136	141
27	33	35	39	172	152	150	2860	1990	1630	535	138	135
28	34	55	40	173	154	200	2910	1920	1620	530	176	130
29	34	100	40	174	---	230	2480	1930	1610	453	150	127
30	35	200	40	175	---	232	2650	2220	1600	427	148	122
31	33	---	40	175	---	230	---	1880	---	355	148	---
TOTAL	948	1251	3221	3254	5812	2905	31599	72210	47900	30360	6150	4287
MEAN	30.6	41.7	104	105	208	93.7	1053	2329	1597	979	198	143
MAX	35	200	454	210	234	232	2910	2750	1790	1580	346	164
MIN	25	32	38	40	152	50	220	1880	1380	355	136	122
AC-FT	1880	2480	6390	6450	11530	5760	62680	143200	95010	60220	12200	8500

CAL YR 1974 TOTAL 102181 MEAN 280 MAX 1120 MIN 21 AC-FT 202600
WTR YR 1975 TOTAL 209807 MEAN 575 MAX 2910 MIN 25 AC-FT 416300

05311400 South Branch Yellow Medicine River at Minneota, Minn.

LOCATION.--Lat 44°33'50", long 95°59'50", in SE¼ sec.26, T.113 N., R.43 W., Lyon County, on downstream side of bridge on State Highway 68, 0.5 mi (0.8 km) northwest of Minneota and 6 mi (9.7 km) upstream from mouth.

DRAINAGE AREA.--111 mi² (287 km²), approximately.

PERIOD OF RECORD.--April 1960 to current year. Monthly and daily discharge for the period Apr. 1, 1960 to June 30, 1960, published in WSP 1914.

GAGE.--Nonrecording gage read once daily. Datum of gage is 1,150.00 ft (350.520 m) above mean sea level, datum of 1929.

AVERAGE DISCHARGE.--15 years, 21.2 ft³/s (0.600 m³/s), 2.59 in/yr (66 mm/yr), 15,360 acre-ft/yr (18.9 hm³/yr).

EXTREMES.--Current year: Maximum discharge, 485 ft³/s (13.7 m³/s) Apr. 23 (gage height, 7.27 ft or 2.216 m); no flow Oct. 1 to Nov. 19, Jan. 3 to Mar. 19, Apr. 3-7, and July 27 to Sept. 30.
Period of record: Maximum discharge, 4,430 ft³/s (125 m³/s) Apr. 8, 1969 (gage height, 13.41 ft or 4.087 m); no flow at times.

REMARKS.--Records fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		0	.16	.01		0	.30	44	4.3	4.1		
2		0	.15	.01		0	.15	40	4.0	3.5		
3		0	.14	0		0	0	35	4.0	2.5		
4		0	.13	0		0	0	29	6.1	2.3		
5		0	.12	0		0	0	26	7.0	2.2		
6		0	.11	0		0	0	23	5.6	2.0		
7		0	.10	0		0	0	21	4.4	1.8		
8		0	.10	0		0	.25	21	4.3	1.6		
9		0	.09	0		0	1.0	18	8.8	1.4		
10		0	.09	0		0	2.0	16	6.6	1.3		
11		0	.09	0		0	5.0	16	6.0	1.2		
12		0	.08	0		0	8.5	14	7.4	1.0		
13		0	.08	0		0	14	13	9.8	.61		
14		0	.08	0		0	30	13	7.6	.53		
15		0	.07	0		0	50	12	15	.53		
16		0	.07	0		0	70	10	13	.45		
17		0	.07	0		0	88	8.8	12	.39		
18		0	.06	0		0	85	8.4	11	.39		
19		0	.06	0		0	78	8.0	9.5	.32		
20		.06	.06	0		9.0	72	7.0	11	.32		
21		.10	.05	0		19	65	6.8	18	.26		
22		.12	.05	0		14	135	6.5	23	.20		
23		.15	.05	0		16	404	7.2	23	.15		
24		.15	.04	0		13	199	14	16	.10		
25		.10	.04	0		8.6	130	12	15	.06		
26		.20	.03	0		5.0	98	9.8	16	.01		
27		.20	.03	0		3.5	90	8.6	9.5	0		
28		.20	.02	0		2.0	88	7.0	7.4	0		
29		.19	.02	0	---	1.5	73	6.3	5.6	0		
30		.18	.01	0	---	1.0	59	5.0	4.3	0		
31		---	.01	0	---	.50	---	4.5	---	0		---
TOTAL	0	1.65	2.26	.02	0	93.10	1854.20	472.9	295.2	29.22	0	0
MEAN	0	.055	.073	.0006	0	3.00	61.8	15.3	9.84	.94	0	0
MAX	0	.20	.16	.01	0	19	404	44	23	4.1	0	0
MIN	0	0	.01	0	0	0	0	4.5	4.0	0	0	0
CFSM	0	.0005	.0007	0	0	.03	.56	.14	.09	.008	0	0
IN.	0	.0006	.0008	0	0	.03	.62	.16	.10	.010	0	0
AC-FT	0	3.3	4.5	.04	0	185	3680	938	586	58	0	0

CAL YR 1974 TOTAL 1731.32 MEAN 4.74 MAX 75 MIN 0 CFSM .04 IN .58 AC-FT 3430
WTR YR 1975 TOTAL 2748.55 MEAN 7.53 MAX 404 MIN 0 CFSM .07 IN .92 AC-FT 5450

PEAK DISCHARGE (BASE, 82 FT³/S).--Apr. 17 (1010) 90 ft³/s (6.48 ft); Apr. 23 (0630) 485 ft³/s (7.27 ft).

05313500 Yellow Medicine River near Granite Falls, Minn.

LOCATION.--Lat 44°43'18" long 95°31'07", in SW¼ sec.35, T.115 N., R.39 W., Yellow Medicine County, on right bank 50 ft (15 m) downstream from highway bridge, 6 mi (9.7 km) upstream from mouth, and 8 mi (13 km) south of town of Granite Falls.

DRAINAGE AREA.--653 mi² (1,691 km²).

PERIOD OF RECORD.--March 1931 to September 1935 (no winter records), October 1935 to September 1938, October 1939 to current year. Monthly discharge only for some periods, published in WSP 1308.

GAGE.--Water-stage recorder. Datum of gage is 971.59 ft (296.141 m) above mean sea level, datum of 1929. Mar. 16, 1931, to June 13, 1938, nonrecording gage, on bridge 50 ft (15 m) upstream at same datum. Oct. 12, 1939, to Nov. 30, 1952, nonrecording gage 500 ft (152 m) downstream at same datum.

AVERAGE DISCHARGE.--39 years (1935-38, 1939-75), 104 ft³/s (2.95 m³/s), 2.16 in/yr (55 mm/yr), 75,350 acre-ft/yr (92.9 hm³/yr).

EXTREMES.--Current year: Maximum discharge, 820 ft³/s (23.2 m³/s) Apr. 25 (gage height, 4.45 ft or 1.356 m); minimum, 1.6 ft³/s (0.045 m³/s) Oct. 1, 2, 3; minimum gage height, 1.99 ft (0.606 m) July 29, 30, 31, Aug. 8.

Period of record: Maximum discharge, 17,200 ft³/s (487 m³/s) Apr. 10, 1969 (gage height, 14.90 ft or 4.542 m); no flow at times in 1931, 1933, 1948, 1959.

Flood in June 1919 reached a stage of 17.5 ft (5.3 m), from information by local residents.

REMARKS.--Records good except those for winter periods, which are fair. Natural discharge affected by unknown amount of interbasin flow between Yellow Medicine, Redwood, and Cottonwood River basins during extreme floods.

REVISIONS (WATER YEARS).--WSP 1508: 1931, 1934(M), 1937(M), 1946(M), 1950(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	2.6	3.0	3.5	3.2	3.4	3.4	310	26	22	2.0	2.5
2	1.7	2.4	3.0	3.5	3.2	3.4	3.4	268	25	18	2.1	2.4
3	1.7	2.3	2.9	3.5	3.2	3.4	3.4	240	24	15	2.1	2.3
4	1.8	2.3	2.9	3.5	3.2	3.4	3.4	216	23	12	2.1	2.4
5	1.9	2.3	2.9	3.5	3.2	3.4	3.4	192	22	13	2.0	2.2
6	2.0	2.4	2.9	3.6	3.2	3.4	3.5	171	20	11	2.0	2.1
7	2.0	2.5	2.9	3.6	3.1	3.4	3.7	155	20	8.8	2.0	2.0
8	2.0	2.4	2.9	3.7	3.1	3.4	4.1	139	20	7.6	1.9	2.0
9	2.1	2.5	2.9	3.7	3.1	3.4	4.8	126	21	6.9	2.0	2.0
10	2.1	2.6	2.9	3.8	3.1	3.4	5.6	117	20	6.0	2.0	2.0
11	2.0	2.6	2.9	3.8	3.1	3.4	6.6	106	20	5.4	2.0	2.3
12	2.2	2.5	2.9	3.8	3.1	3.5	7.6	98	21	5.1	2.0	2.2
13	2.2	2.5	2.9	3.9	3.1	3.6	9.1	90	21	4.8	2.1	2.1
14	2.2	2.5	3.0	3.9	3.1	3.6	14	83	22	4.5	2.1	2.0
15	2.3	2.5	3.0	3.9	3.1	3.7	50	76	28	4.1	2.1	1.9
16	2.4	2.5	3.1	3.9	3.1	3.8	94	69	31	3.6	2.1	1.9
17	2.3	2.6	3.1	3.9	3.1	3.9	198	63	33	3.2	2.0	1.9
18	2.3	2.6	3.1	3.9	3.1	4.0	346	60	35	3.0	2.1	1.9
19	2.5	2.7	3.1	3.9	3.1	4.2	441	54	36	2.7	2.3	1.9
20	2.5	2.6	3.1	3.9	3.2	4.4	446	54	39	2.5	2.4	2.0
21	2.4	2.7	3.2	3.8	3.2	4.4	372	52	55	2.7	2.6	2.0
22	2.3	2.7	3.2	3.8	3.3	4.3	297	46	48	2.7	2.6	1.9
23	2.3	2.8	3.2	3.7	3.4	4.2	366	48	40	2.5	2.5	1.9
24	2.3	2.8	3.2	3.7	3.4	4.0	586	42	50	2.4	2.4	1.9
25	2.3	2.9	3.2	3.7	3.4	3.8	807	39	59	2.3	2.2	1.8
26	2.3	2.8	3.2	3.7	3.4	3.7	718	46	48	2.2	2.1	1.7
27	2.3	2.8	3.3	3.6	3.4	3.6	555	45	38	2.0	2.2	1.7
28	2.3	2.8	3.3	3.5	3.4	3.5	462	41	38	2.0	3.1	1.8
29	2.5	2.8	3.3	3.4	---	3.4	408	36	36	2.0	2.9	1.7
30	2.5	3.0	3.4	3.3	---	3.4	366	31	27	1.9	2.8	1.8
31	2.7	---	3.4	3.3	---	3.4	---	28	---	1.9	2.6	---
TOTAL	68.1	78.0	95.3	114.2	89.6	113.8	6588.0	3141	946	183.8	69.4	60.2
MEAN	2.20	2.60	3.07	3.68	3.20	3.67	220	101	31.5	5.93	2.24	2.01
MAX	2.7	3.0	3.4	3.9	3.4	4.4	807	310	59	22	3.1	2.5
MIN	1.7	2.3	2.9	3.3	3.1	3.4	3.4	28	20	1.9	1.9	1.7
CFSM	.003	.004	.005	.006	.005	.006	.34	.15	.05	.009	.003	.003
IN.	.004	.004	.005	.007	.005	.006	.38	.18	.05	.01	.004	.003

CAL YR 1974 TOTAL 6174.0 MEAN 16.9 MAX 262 MIN 1.5 CFSM .03 IN .35
WTR YR 1975 TOTAL 11547.4 MEAN 31.6 MAX 807 MIN 1.7 CFSM .05 IN .66

PEAK DISCHARGE (BASE, 300 FT³/S).--Apr. 20 (2330) 575 ft³/s (4.03 ft); Apr. 25 (0615) 820 ft³/s (4.45 ft).

05315000 Redwood River at Marshall, Minn.

LOCATION.--Lat 44°27'05", long 95°47'13", in SE¼NW¼ sec.4, T.111 N., R.41 W., Lyon County, on downstream side of highway bridge on Fourth Street in Marshall, and 10 mi (16 km) upstream from Threemile Creek.

DRAINAGE AREA.--307 mi² (795 km²).

PERIOD OF RECORD.--March 1940 to current year. Monthly discharge only for some periods, published in WSP 1308.

GAGE.--Nonrecording gage and crest-stage gage. Datum of gage is 1,144.88 ft (348.959 m) above mean sea level, datum of 1929. Nonrecording gage and crest-stage gage on diversion channel. Datum of gage is 1,100.00 ft (335.280 m) above mean sea level, datum of 1929 (levels by Corps of Engineers).

AVERAGE DISCHARGE.--35 years, 46.0 ft³/s (1.303 m³/s), 2.03 in/yr (52 mm/yr), 33,330 acre-ft (41.1 hm³/yr).

EXTREMES (Combined flow).--Current year: Maximum discharge, 204 ft³/s (5.78 m³/s) Apr. 23; no flow Oct. 1, July 27-30, Aug. 9-15, 17, 18, Sept. 7-10, 23.

Period of record: Maximum discharge, 5,590 ft³/s (158 m³/s) Apr. 10, 1969; no flow at times.

(River only).--Current year: Maximum discharge, 204 ft³/s (5.78 m³/s) Apr. 23 (gage height, 2.54 ft or 0.774 m, from crest-stage gage); maximum gage height, 2.85 ft (0.869 m) Apr. 15 (from crest-stage gage, backwater from ice); no flow Oct. 1, July 27-30, Aug. 8-15, 17, 18, Sept. 7-10, 23.

Period of record: Maximum discharge, 5,370 ft³/s (152 m³/s) June 17, 1957 (gage height, 10.14 ft or 3.091 m); maximum gage height, 11.05 ft (3.368 m) Apr. 6, 1951 (from floodmark); no flow at times.

(Diversion only).--Current year: No flow during year.

Period of record: Maximum discharge, 4,440 ft³/s (126 m³/s) Apr. 10, 1969 (gage height, 78.45 ft or 23.912 m); no flow on many days.

REMARKS.--Records good except those for winter period, which are fair. Water diverted at medium and high stages into diversion channel 3 mi (4.8 km) above station, bypasses station and returns to river 1 mi (1.6 km) below station. Diversion began Mar. 18, 1964. There was no flow through the diversion channel during the 1975 water year. Unknown amount of natural diversion into Cottonwood River basin at extremely high stages.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	4.0	4.4	3.9	3.7	5.4	9.6	82	11	2.5	.01	.06
2	.36	4.0	4.4	3.9	3.9	5.4	9.4	81	14	1.9	.36	.05
3	.64	4.5	4.4	3.9	4.0	5.4	9.2	78	14	2.2	.10	.05
4	1.9	4.5	4.4	3.9	4.1	5.4	9.2	69	14	1.6	.07	.04
5	4.0	4.5	4.4	3.9	4.2	5.5	9.3	62	9.2	1.9	.08	.06
6	.84	4.0	4.4	3.9	4.3	5.5	11	55	7.6	1.9	.05	.05
7	3.8	3.2	4.4	3.8	4.4	5.5	14	50	7.6	1.6	.06	0
8	5.6	3.6	4.4	3.8	4.5	5.5	17	49	6.9	1.5	.04	0
9	1.7	3.6	4.4	3.7	4.6	5.6	22	46	10	1.6	0	0
10	2.0	4.5	4.4	3.5	4.7	5.6	29	39	9.2	1.1	0	0
11	3.6	5.1	4.4	3.0	4.8	5.7	37	36	12	.84	0	.10
12	2.3	4.5	4.4	2.6	4.9	5.7	46	34	11	.64	0	.18
13	1.3	4.0	4.4	2.2	5.0	5.8	59	30	11	.84	0	1.2
14	.82	4.0	4.4	2.0	5.2	5.8	74	29	11	.64	0	.14
15	1.3	3.2	4.3	1.8	5.2	6.0	92	26	19	.48	0	.12
16	1.1	3.2	4.3	1.7	5.2	6.4	122	23	14	.48	.02	.18
17	.26	2.5	4.2	1.7	5.2	8.4	141	20	16	.48	0	.07
18	.26	3.2	4.2	1.7	5.2	10	161	19	12	.48	0	.42
19	.48	3.2	4.2	1.7	5.2	12	127	19	11	.08	1.1	.16
20	.64	3.2	4.2	1.8	5.2	12	93	18	10	.08	.48	.36
21	.64	2.8	4.2	2.0	5.3	12	94	16	13	.15	.84	.12
22	1.7	2.5	4.1	2.1	5.3	12	153	17	11	.28	1.1	.03
23	4.3	3.9	4.1	2.3	5.3	11	155	17	10	.21	1.1	0
24	6.1	5.6	4.1	2.4	5.4	11	115	16	13	.20	.84	.03
25	3.2	3.6	4.1	2.5	5.4	11	93	17	7.6	.08	.64	.23
26	3.6	4.1	4.0	2.7	5.4	11	75	15	5.6	.02	.21	1.1
27	3.6	4.3	4.0	2.8	5.4	10	81	15	5.6	0	.07	.79
28	3.6	4.3	4.0	3.0	5.4	10	99	14	5.1	0	.28	.12
29	3.6	4.4	4.0	3.2	---	10	108	14	4.0	0	.10	.32
30	3.6	4.4	3.9	3.4	---	9.8	91	15	3.6	0	.15	.15
31	4.0	---	3.9	3.5	---	9.7	---	13	---	.04	.10	---
TOTAL	70.84	116.4	131.4	88.3	136.4	250.1	2155.7	1034	309.0	23.82	7.80	6.13
MEAN	2.29	3.88	4.24	2.85	4.87	8.07	71.9	33.4	10.3	.77	.25	.20
MAX	6.1	5.6	4.4	3.9	5.4	12	161	82	19	2.5	1.1	1.2
MIN	0	2.5	3.9	1.7	3.7	5.4	9.2	13	3.6	0	0	0
CFSM	.007	.01	.01	.009	.02	.03	.23	.11	.03	.003	.0008	.0007
IN.	.009	.01	.02	.01	.02	.03	.26	.13	.04	.003	.0009	.0007

CAL YR 1974 TOTAL 4216.73 MEAN 11.6 MAX 110 MIN 0 CFSM .04 IN .51
WTR YR 1975 TOTAL 4329.89 MEAN 11.9 MAX 161 MIN 0 CFSM .04 IN .52

05316500 Redwood River near Redwood Falls, Minn.

LOCATION.--Lat 44°31'25", long 95°10'20", in SE¼NE¼ sec.9, T.112 N., R.36 W., Redwood County, on right bank 20 ft (6 m) upstream from highway bridge, 3 mi (4.8 km) west of town of Redwood Falls, and 8.5 mi (13.7 km) upstream from mouth.

DRAINAGE AREA.--697 mi² (1805 km²).

PERIOD OF RECORD.--July 1909 to September 1914 (no winter records except 1911-12). August 1930 to September 1935 (no winter records), October 1935 to current year.

GAGE.--Water-stage recorder. Datum of gage is 972.33 ft (296.366 m) above mean sea level, datum of 1929. July 1909 to September 1914, nonrecording gage at bridge 20 ft (6 m) downstream at datum 0.22 ft (0.067 m) lower. August 1930 to Oct. 25, 1949, nonrecording gage, at bridge 20 ft (6 m) downstream at present datum.

AVERAGE DISCHARGE.--41 years (1911-12, 1935-75), 101 ft³/s (2.86 m³/s), 1.97 in/yr (50 mm/yr), 73,170 acre-ft/yr (90.2 hm³/yr)

EXTREMES.--Current year: Maximum discharge, 1,710 ft³/s (48.4 m³/s) Apr. 19 (gage height, 5.22 ft or 1.591 m), backwater from ice; minimum discharge, 0.92 ft³/s (0.026 m³/s) Oct. 1 (gage height, 1.46 ft or 0.445 m); minimum gage height, 1.29 ft (0.393 m) Sept. 8 and 9.

Period of record: Maximum discharge, 19,700 ft³/s (558 m³/s) June 18, 1957 (gage height, 15.92 ft or 4.852 m, from floodmark); no flow for several days in January 1940 and for part of each day Aug. 19, 20, 1959.

REMARKS.--Records good except those for winter periods, which are fair. Natural discharge affected by unknown amount of interbasin flow between Yellow Medicine, Redwood, and Cottonwood River basins during extreme floods.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.92	6.3	7.2	7.0	1.4	3.0	10	338	40	43	2.8	2.0
2	.99	4.6	7.2	6.7	1.5	3.1	10	293	40	34	2.7	1.9
3	1.2	3.9	7.2	6.4	1.6	3.1	10	264	40	29	2.8	1.7
4	1.6	3.8	7.2	6.2	1.6	3.2	10	257	45	26	2.4	1.8
5	1.9	3.8	7.2	6.0	1.7	3.2	10	228	52	23	2.6	1.5
6	2.6	3.8	7.2	5.8	1.7	3.3	10	199	48	22	2.2	1.2
7	2.5	4.1	7.2	5.6	1.8	3.3	10	185	38	19	2.6	1.1
8	3.2	4.1	7.2	5.4	1.9	3.3	10	170	36	17	2.9	1.1
9	3.3	4.1	8.0	5.1	1.9	3.3	10	160	35	16	2.5	1.0
10	3.4	4.8	15	4.2	2.0	3.3	10	149	35	15	2.2	1.4
11	4.7	5.1	17	1.2	2.0	3.4	19	145	42	14	2.1	2.6
12	4.3	5.1	18	1.1	2.1	3.4	33	136	43	12	2.1	1.9
13	3.8	5.1	18	1.1	2.2	3.4	82	128	40	12	1.9	2.0
14	3.4	5.1	17	1.1	2.2	3.4	126	120	41	11	2.1	1.9
15	3.4	5.2	16	1.1	2.3	3.5	169	110	61	11	2.1	1.7
16	3.3	5.3	15	1.1	2.3	3.6	223	101	72	9.5	2.0	1.6
17	2.8	5.5	14	1.1	2.4	3.7	349	91	73	8.1	2.1	1.6
18	2.5	5.9	13	1.1	2.4	3.9	580	85	64	7.3	2.2	3.3
19	2.4	6.3	12	1.1	2.5	4.1	1130	81	58	7.2	2.6	2.3
20	2.2	6.7	11	1.1	2.5	4.7	1220	77	71	6.6	3.1	2.0
21	2.2	7.4	11	1.1	2.6	6.7	430	68	82	6.2	3.1	2.0
22	2.6	7.5	9.8	1.1	2.6	12	379	65	109	5.4	3.6	1.6
23	2.8	7.4	8.8	1.1	2.7	10	555	62	84	5.1	3.6	1.6
24	3.2	7.4	8.2	1.2	2.7	11	837	61	100	4.9	3.5	1.5
25	3.2	7.2	7.8	1.2	2.8	10	776	57	113	4.7	2.8	1.4
26	3.2	7.2	7.6	1.2	2.8	10	627	61	129	4.3	2.4	1.3
27	3.5	7.2	7.4	1.3	2.9	10	533	56	89	3.5	2.2	1.1
28	3.7	7.2	7.4	1.3	2.9	10	520	51	69	3.2	2.3	1.1
29	4.1	7.2	7.3	1.3	---	10	481	48	60	2.9	2.2	1.2
30	5.9	7.2	7.2	1.4	---	10	398	45	52	2.6	2.3	1.2
31	4.3	---	7.1	1.4	---	10	---	42	---	2.9	2.1	---
TOTAL	93.11	171.5	321.2	83.1	62.0	178.9	9567	3933	1863	388.4	78.1	49.6
MEAN	3.00	5.72	10.4	2.68	2.21	5.77	319	127	62.1	12.5	2.52	1.65
MAX	5.9	7.5	18	7.0	2.9	12	1220	338	129	43	3.6	3.3
MIN	.92	3.8	7.1	1.1	1.4	3.0	10	42	35	2.6	1.9	1.0
CFSM	.004	.008	.01	.004	.003	.008	.46	.18	.09	.02	.004	.002
IN.	.005	.009	.02	.004	.003	.010	.51	.21	.10	.02	.004	.003
AC-FT	185	340	637	165	123	355	18980	7800	3700	770	155	98

CAL YR 1974 TOTAL 10783.31 MEAN 29.5 MAX 160 MIN .92 CFSM .04 IN .58 AC-FT 21390
WTR YR 1975 TOTAL 16788.91 MEAN 46.0 MAX 1220 MIN .92 CFSM .07 IN .90 AC-FT 33300

PEAK DISCHARGE (BASE, 150 FT³/S)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
4-19	1715	5.22	1,710	6-20	2000	2.50	1.87
4-24	2000	3.83	890	6-26	1415	2.38	1.52

05316770 Minnesota River at New Ulm, Minn.

LOCATION.--Lat 44°19'29", long 94°27'09", in NE¼NE¼ sec.20, T.110 N., R.30 W., Nicollet County, on left bank 30 ft (9 m) downstream from U.S. Highway 14, at New Ulm and 6.1 mi (9.8 km) upstream from Cottonwood River.

DRAINAGE AREA.--9,530 mi² (24,680 km²).

PERIOD OF RECORD.--October 1967 to current year.

GAGE.--Water-stage recorder. Datum of gage is 778.72 ft (237.354) above mean sea level, datum of 1929

AVERAGE DISCHARGE.--8 years, 1,619 ft³/s (45.8 m³/s), 2.31 in/yr (59 mm/yr), 1,173,000 acre-ft/yr (1.45 km³/yr).

EXTREMES.--Current year: Maximum discharge, 8,170 ft³/s (231 m³/s) Apr. 30 (gage height, 18.12 ft or 5.523 m); minimum, 51 ft³/s (1.44 m³/s) Oct. 1, (gage height, 5.98 ft or 1.823 m).
Period of record: Maximum discharge, 58,000 ft³/s (1,640 m³/s) Apr. 15, 1969 (gage height, 30.65 ft or 9.342 m); minimum daily, 42 ft³/s (1.19 m³/s) Jan. 14, 19, 1968.

REMARKS.--Records good except those for the winter periods, which are fair. Records of water-quality data for the current year are published in Section 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	54	92	91	87	187	253	166	8040	2420	3030	569	232
2	60	87	89	86	203	247	171	7720	2440	2790	513	235
3	63	84	89	85	208	237	185	7210	2340	2620	496	224
4	67	84	89	84	209	229	200	6660	2250	2510	459	216
5	67	84	89	84	211	225	207	6140	2150	2410	421	208
6	67	86	102	83	214	214	208	5690	2120	2300	398	202
7	66	87	153	83	216	203	217	5270	2100	2220	386	195
8	68	84	200	83	217	187	226	4870	2070	2140	370	190
9	68	90	218	83	225	176	224	4470	2010	2060	355	192
10	70	93	197	83	237	174	232	4140	1930	1970	346	200
11	80	93	155	82	244	174	244	3910	1820	1900	340	238
12	76	91	134	82	258	174	262	3780	1800	1840	340	226
13	76	91	132	82	254	157	309	3670	1870	1740	296	226
14	75	90	132	82	259	157	600	3590	2020	1580	233	226
15	75	89	131	82	265	171	842	3510	2180	1520	260	226
16	74	91	119	82	265	173	1380	3420	2300	1490	203	223
17	74	91	107	82	265	175	1830	3320	2440	1410	198	215
18	75	91	103	82	267	176	2560	3250	2500	1280	198	232
19	75	91	101	82	262	180	3060	3150	2490	1150	205	231
20	76	94	98	82	265	183	3200	3080	2420	1020	208	238
21	79	94	97	83	267	187	3260	3000	2710	901	206	240
22	80	94	95	84	268	210	3370	2930	3530	826	211	247
23	79	93	95	100	261	256	3900	2910	4000	785	219	252
24	79	92	93	112	260	269	4700	2950	4130	758	214	232
25	79	90	92	121	260	254	5590	2920	4110	750	211	206
26	79	91	92	130	257	236	5970	2870	4000	732	207	202
27	79	89	92	140	260	216	6160	2830	3800	694	208	202
28	82	88	91	147	260	191	6810	2760	3580	679	203	203
29	84	90	91	156	---	183	7610	2680	3450	659	294	203
30	89	91	90	166	---	173	8080	2550	3320	631	229	195
31	89	---	89	176	---	168	---	2450	---	607	219	---
TOTAL	2304	2700	3546	3076	6822	6206	71771	125740	80300	47002	9210	6559
MEAN	74.3	90.0	114	99.2	244	200	2392	4056	2677	1516	297	219
MAX	89	94	218	176	267	269	8080	8040	4130	3030	569	252
MIN	54	84	89	82	187	157	166	2450	1800	607	198	192
CFSM	.008	.009	.01	.01	.03	.02	.25	.43	.28	.16	.03	.02
IN.	.009	.01	.01	.01	.03	.02	.28	.49	.31	.18	.04	.03
AC-FT	4570	5360	7030	6100	13530	12310	142400	249400	159300	93230	18280	13010

CAL YR 1974 TOTAL 190848 MEAN 523 MAX 2250 MIN 51 CFSM .05 IN .74 AC-FT 378500
WTR YR 1975 TOTAL 365242 MEAN 1001 MAX 8080 MIN 54 CFSM .11 IN 1.43 AC-FT 724500

05317000 Cottonwood River near New Ulm, Minn.

LOCATION.--Lat 44°17'40", long 94°26'40", in N½ sec.33, T.110 N., R.30 W., Brown County, on left bank 600 ft (183 m) upstream from highway bridge, 1.8 mi (2.9 km) south of New Ulm, and 2 mi (3.2 km) upstream from mouth.

DRAINAGE AREA.--1,280 mi^2 (3,320 km^2), approximately.

PERIOD OF RECORD.--July 1909 to December 1913, March 1931 to March 1938, August 1938 to current year (winter records incomplete prior to 1936).

GAGE.--Water-stage recorder. Datum of gage is 796.83 ft (242.874 m) above mean sea level, datum of 1929. July 1, 1909, to Dec. 13, 1913, nonrecording gage at site 2.7 mi (4.3 km) upstream at different datum. Mar. 15, 1931, to Mar. 31, 1938, nonrecording gage 2.2 mi (3.5 km) upstream at datum 11.41 ft (3.477 m) higher. Aug. 23, 1938, to June 25, 1948, nonrecording gage at present site and datum.

AVERAGE DISCHARGE.--41 years (1911-13, 1935-37, 1938-75), 271 ft^3/s (7.67 m^3/s), 2.88 in/yr (73 mm/yr), 196,300 acre-ft/yr (242 hm^3/yr).

EXTREMES.--Current year: Maximum discharge, 3,260 ft^3/s (92.3 m^3/s) Apr. 24 (gage height, 9.66 ft or 2.944 m); minimum, 6.0 ft^3/s (0.170 m^3/s) Nov. 17 (gage height, 1.04 ft or 0.317 m).

Period of record: Maximum discharge, 28,700 ft^3/s (813 m^3/s) Apr. 10, 1969 (gage height, 19.15 ft or 5.837 m); maximum gage height, 20.86 ft (6.358 m) Apr. 8, 1965 (from floodmark, backwater from ice); minimum discharge observed, 0.5 ft^3/s (0.014 m^3/s) Nov. 27, 1952; minimum gage height, 0.72 ft (0.219 m) Nov. 20, 1964.

REMARKS.--Records good except those for winter periods, which are fair. Water-quality data for the current year are published in Part 2 of this report.

REVISIONS (WATER YEARS).--WSP 355: 1912.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.7	23	18	16	13	12	54	1270	150	200	23	24
2	9.7	25	17	16	13	12	53	1010	141	176	23	22
3	10	22	17	16	13	12	51	851	138	155	23	20
4	11	21	17	16	12	12	49	733	147	138	21	19
5	12	20	16	16	12	12	48	643	148	127	21	19
6	14	20	16	16	12	12	52	560	145	116	21	17
7	14	20	16	16	12	12	62	487	142	107	20	16
8	15	19	16	16	12	12	75	439	136	100	17	15
9	16	20	15	16	12	12	95	398	130	92	20	16
10	21	25	15	16	12	12	110	362	132	86	18	21
11	25	25	15	16	12	12	130	339	125	79	17	29
12	19	24	15	15	12	12	165	336	127	74	23	27
13	24	24	15	15	12	12	228	312	122	68	22	24
14	24	19	15	15	12	12	510	297	129	63	18	23
15	22	21	15	15	12	12	983	274	181	57	19	20
16	18	24	15	15	12	12	1390	255	187	51	19	18
17	17	25	15	14	12	12	1620	241	261	47	18	17
18	17	24	15	14	12	12	2280	227	301	43	18	17
19	15	23	15	14	12	13	2520	215	293	41	35	18
20	15	23	15	14	12	20	2160	204	287	39	34	18
21	16	23	16	14	12	34	1800	194	351	36	34	17
22	16	23	16	14	12	47	1220	184	502	34	35	17
23	15	23	16	14	12	58	1490	183	483	32	35	15
24	15	23	16	13	12	62	2990	173	747	31	32	15
25	15	22	16	13	12	61	2840	179	538	30	29	15
26	17	21	16	13	12	60	2060	260	405	30	29	14
27	21	21	16	13	12	60	1650	241	337	29	28	13
28	17	20	16	13	12	58	1550	217	282	28	50	20
29	19	19	16	13	---	57	1550	190	270	26	57	18
30	19	19	16	13	---	56	1580	178	237	25	42	17
31	20	---	16	13	---	55	---	163	---	25	29	---
TOTAL	518.4	661	489	453	339	857	31065	11615	7574	2185	830	561
MEAN	16.7	22.0	15.8	14.6	12.1	27.6	1036	375	252	70.5	26.8	18.7
MAX	25	25	18	16	13	62	2990	1270	747	200	57	29
MIN	9.7	19	15	13	12	12	48	163	122	25	17	13
CFSM	.01	.02	.01	.01	.009	.02	.81	.29	.20	.06	.02	.01
IN.	.02	.02	.01	.01	.010	.02	.90	.34	.22	.06	.02	.02
AC-FT	1030	1310	970	899	672	1700	61620	23040	15020	4330	1650	1110

CAL YR 1974 TOTAL 38705.6 MEAN 106 MAX 733 MIN 9.0 CFSM .08 IN 1.12 AC-FT 76770
WTR YR 1975 TOTAL 57147.4 MEAN 157 MAX 2990 MIN 9.7 CFSM .12 IN 1.66 AC-FT 113400

MINNESOTA RIVER BASIN

05317200 Little Cottonwood River near Courtland, Minn.

LOCATION.--Lat 44°14'47", long 94°20'19", in SW¼NE¼ sec.17, T.109 N., R.29 W., Blue Earth County, on right bank 30 ft (9.1 m) downstream from bridge on State Highway 68, 0.7 mi (1.1 km) above mouth, 1.5 mi (2.4 km) south of Courtland.

DRAINAGE AREA.--230 mi² (596 km²), approximately.

PERIOD OF RECORD.--October 1973 to current year. September 1969 to September 1973, operated as a low-flow station only.

GAGE.--Water-stage recorder. Datum of gage is 788.25 ft (240.259 m) above mean sea level, datum of 1929.

EXTREMES.--Current year: Maximum discharge, 517 ft³/s (14.6 m³/s) Apr. 17 (gage height, 5.27 ft or 1.606 m); minimum, 0.67 ft³/s (0.02 m³/s) Sept. 28, 29; minimum gage height, 1.58 ft (0.482 m) Aug. 13-28.

Period of record: Maximum discharge, 517 ft³/s (14.6 m³/s) Apr. 17, 1975 (gage height, 5.27 ft or 1.606 m); minimum, 0.67 ft³/s (0.02 m³/s) Sept. 27, 28, 1974, Sept. 28, 29, 1975; minimum gage height, 1.58 ft (0.482 m) Aug. 13-28, 1975.

REMARKS.--Records good.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.74	3.0	2.4	2.0	1.4	2.1	11	176	24	55	2.5	2.0
2	.81	3.0	2.4	2.0	1.4	2.1	12	167	24	49	2.4	1.9
3	.81	2.9	2.2	2.0	1.4	2.2	12	155	24	44	2.4	1.7
4	.88	2.6	2.2	2.0	1.4	2.2	12	140	24	39	2.1	1.7
5	.96	2.4	2.1	2.0	1.4	2.5	13	118	25	36	2.0	1.7
6	1.0	2.3	2.1	2.0	1.4	2.7	15	105	25	34	1.9	1.6
7	1.0	2.1	2.1	2.0	1.4	2.7	18	95	25	31	1.6	1.5
8	1.0	2.1	1.8	2.1	1.4	2.9	29	82	24	27	1.5	1.5
9	1.3	2.2	1.6	2.1	1.3	2.9	28	74	24	25	1.5	1.5
10	1.4	2.2	1.6	2.0	1.3	3.0	49	67	24	23	1.5	1.5
11	2.1	2.2	1.6	1.8	1.3	3.0	68	61	24	21	1.5	1.5
12	2.1	2.9	1.6	2.0	1.3	3.2	91	59	25	19	1.4	1.5
13	2.1	3.4	1.6	2.0	1.3	3.2	122	57	25	18	1.3	1.4
14	2.1	2.7	1.6	2.0	1.3	3.4	209	52	27	17	1.3	1.4
15	2.0	2.5	1.6	2.0	1.3	3.4	283	47	34	15	1.3	1.3
16	1.9	2.6	1.7	2.0	1.3	3.6	379	43	49	12	1.3	1.3
17	1.9	2.6	1.7	1.9	1.4	3.6	424	40	49	11	1.3	1.2
18	1.9	2.8	1.7	1.8	1.4	4.2	290	38	61	9.8	1.3	1.1
19	2.0	3.0	1.7	1.8	1.5	5.5	236	37	56	8.9	1.3	1.1
20	2.0	2.9	1.7	1.8	1.5	6.4	233	35	52	8.1	1.3	1.0
21	1.9	2.7	1.8	1.6	1.6	6.7	224	32	125	7.1	1.3	1.0
22	1.7	2.8	1.8	1.6	1.6	9.4	215	31	239	7.1	1.3	.96
23	1.7	2.9	1.8	1.6	1.7	13	261	31	173	6.4	1.3	.88
24	2.1	2.7	1.8	1.5	1.7	12	246	31	116	6.1	1.3	.88
25	2.0	2.7	1.8	1.5	1.8	11	209	28	105	5.2	1.3	.81
26	2.0	2.9	1.8	1.5	1.8	11	192	28	91	4.5	1.4	.81
27	2.0	2.4	1.8	1.5	2.0	9.8	215	27	83	4.2	1.4	.74
28	2.0	2.4	1.8	1.5	2.0	9.8	312	26	76	3.6	2.2	.68
29	2.4	2.4	1.8	1.5	---	10	259	25	68	3.4	2.5	.70
30	2.7	2.4	1.8	1.5	---	11	195	24	63	2.9	2.2	.81
31	2.7	---	1.8	1.4	---	11	---	24	---	2.5	2.1	---
TOTAL	53.20	78.7	56.8	56.0	41.6	179.5	4862	1955	1784	555.8	51.0	37.67
MEAN	1.72	2.62	1.83	1.81	1.49	5.79	162	63.1	59.5	17.9	1.65	1.26
MAX	2.7	3.4	2.4	2.1	2.0	13	424	176	239	55	2.5	2.0
MIN	.74	2.1	1.6	1.4	1.3	2.1	11	24	24	2.5	1.3	.68
AC-FT	106	156	113	111	83	356	9640	3880	3540	1100	101	75

CAL YR 1974 TOTAL 7175.53 MEAN 19.7 MAX 101 MIN .67 AC-FT 14230
WTR YR 1975 TOTAL 9711.27 MEAN 26.6 MAX 424 MIN .68 AC-FT 19260

05320000 Blue Earth River near Rapidan, Minn.

LOCATION.--Lat 44°05'44", long 94°06'33', in SE¼SE¼ sec.6, T.107 N., R.27 W., Blue Earth County, on left bank 0.2 mi (0.3 km) downstream from abandoned powerplant of Northern States Power Co., 2 mi (3.2 km) west of Rapidan, 3.5 mi (5.6 km) downstream from Watonwan River, and 7.8 mi (12.6 km) upstream from Le Sueur River.

DRAINAGE AREA.--2,430 mi^2 (6,290 km^2), approximately.

PERIOD OF RECORD.--July 1909 to November 1910 (published as "at Rapidan Mills," no winter records), October 1939 to September 1945, July 1949 to current year.

GAGE.--Water-stage recorder. Datum of gage is 807.83 ft (246.227 m) above mean sea level, datum of 1929. July 20, 1909, to Apr. 28, 1910, nonrecording gage at site 0.2 mi (0.3 km) upstream at different datum. Apr. 29 to Nov. 12, 1910, nonrecording gage at site 800 ft (244 m) upstream at different datum. Oct. 4 to Nov. 14, 1939, nonrecording gage at present site and datum.

AVERAGE DISCHARGE.--32 years (1939-45, 1949-75), 849 ft^3/s (24.04 m^3/s), 4.74 in/yr (120 mm/yr), 615,100 acre-ft/yr (758 hm^3/yr).

EXTREMES.--Current year: Maximum discharge, 6,460 ft^3/s (183 m^3/s) May 1 (gage height, 7.13 ft or 2.173 m); maximum gage, 7.15 ft (2.179 m) Apr. 13 (backwater from ice); minimum discharge, 28 ft^3/s (0.79 m^3/s) Jan. 12, 13, 16 (gage height, 1.32 ft or 0.402 m).

Period of record: Maximum discharge, 43,100 ft^3/s (1,220 m^3/s) Apr. 9, 1965 (gage height, 21.36 ft or 6.511 m, from floodmark); minimum, 6.9 ft^3/s (0.20 m^3/s) Oct. 12, 1955 (gage height, 1.04 ft or 0.317 m).

REMARKS.--Records good except those for winter periods, which are fair.

REVISIONS (WATER YEARS).--WSP 895: Drainage area. WSP 1508: 1910.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60	101	91	67	56	63	918	6410	2210	2100	182	74
2	59	96	78	65	56	63	850	6250	2160	1890	178	73
3	59	96	71	65	56	65	828	5590	1870	1720	161	68
4	58	104	71	65	56	63	865	4820	1730	1580	156	67
5	60	110	71	65	54	63	910	4170	2080	1540	149	66
6	64	123	71	65	56	63	1180	3710	2820	1430	145	64
7	64	116	71	63	60	60	1450	3420	3130	1310	136	60
8	65	110	61	60	60	60	2060	3040	3380	1210	127	60
9	65	110	54	60	60	60	2540	2750	3260	1100	120	60
10	63	113	54	50	63	58	2700	2480	2650	999	114	61
11	97	110	54	56	67	58	2800	2300	2290	915	108	78
12	86	107	56	29	65	58	3350	2270	2360	842	110	75
13	81	107	60	28	63	56	3880	2510	2610	781	105	73
14	79	99	65	29	65	56	4090	2660	2920	728	99	71
15	76	74	67	31	63	57	4500	2490	3920	675	98	72
16	71	85	69	29	63	59	4750	2210	4150	625	91	67
17	71	93	69	32	63	57	4900	1940	4030	575	89	64
18	71	116	69	37	63	62	4820	1780	3890	524	86	61
19	74	110	69	40	63	72	4680	1660	3950	470	93	62
20	73	104	69	51	63	116	4510	1540	3860	431	99	62
21	72	104	69	56	63	277	4300	1450	3950	399	94	62
22	68	104	69	52	63	242	3940	1310	4210	369	109	61
23	68	101	71	54	63	345	3660	1280	4420	344	119	59
24	67	99	71	56	65	562	3510	1270	4360	322	107	57
25	67	58	69	56	65	1170	3690	1330	3830	299	103	56
26	66	63	69	54	65	1290	3880	1390	3330	278	96	56
27	69	74	67	54	65	1410	4020	1320	2900	258	91	55
28	69	74	67	54	65	1420	5250	1420	2590	239	88	60
29	78	86	67	58	---	1390	6120	1470	2880	222	89	62
30	81	91	67	56	---	1250	6330	1460	2810	205	84	61
31	86	---	67	56	---	1050	---	1850	---	191	78	---
TOTAL	2187	2936	2093	1573	1729	11675	101281	79530	94130	24577	3500	1927
MEAN	70.5	97.9	67.5	50.7	61.8	377	3376	2565	3138	793	113	64.2
MAX	97	123	91	67	67	1420	6330	6410	4420	2100	182	78
MIN	58	58	54	28	54	56	828	1270	1730	191	78	55
CFSM	.03	.04	.03	.02	.03	.16	1.39	1.06	1.29	.33	.05	.03
IN.	.03	.04	.03	.02	.03	.18	1.55	1.22	1.44	.38	.05	.03
AC-FT	4340	5820	4150	3120	3430	23160	200900	157700	186700	48750	6940	3820

CAL YR 1974 TOTAL 294992 MEAN 808 MAX 6160 MIN 54 CFSM .33 IN 4.52 AC-FT 585100
WTR YR 1975 TOTAL 327138 MEAN 896 MAX 6410 MIN 28 CFSM .37 IN 5.01 AC-FT 648900

05320500 Le Sueur River near Rapidan, Minn.

LOCATION.--Lat 44°06'40", long 94°02'28", in SW¼ sec.35, T.108 N., R.27 W., Blue Earth County, on right bank 600 ft (183 m) downstream from highway bridge, 1.8 mi (2.9 km) northeast of Rapidan, and 2.3 mi (3.7 km) upstream from mouth.

DRAINAGE AREA.--1,100 mi² (2,850 km²), approximately.

PERIOD OF RECORD.--October 1939 to September 1945, July 1949 to current year.

GAGE.--Water-stage recorder. Datum of gage is 775.76 ft (236.452 m) above mean sea level, datum of 1929. Prior to Nov. 15, 1939, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--32 years, 444 ft³/s (12.57 m³/s), 5.48 in/yr (139 mm/yr), 321,700 acre-ft/yr (397 hm³/yr).

EXTREMES.--Current year: Maximum discharge, 5,630 ft³/s (159 m³/s) Apr. 30 (gage height, 8.52 ft or 2.597 m); minimum daily, 20 ft³/s (0.57 m³/s) Sept. 24-26.

Period of record: Maximum discharge, 24,700 ft³/s (700 m³/s) Apr. 8, 1965 (gage height, 22.10 ft or 6.736 m, from floodmark); maximum gage height, 22.72 ft (6.925 m) May 22, 1960 (from floodmark); minimum daily discharge, 1.6 ft³/s (0.045 m³/s) Feb. 9-25, 1959; minimum gage height, 1.22 ft (0.372 m) Aug. 31, 1970.

REMARKS.--Records fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	47	43	26	23	23	545	5190	1190	2010	84	32
2	22	45	41	26	23	23	565	4230	1240	1860	80	30
3	22	44	40	25	23	23	580	3660	1180	1750	82	27
4	22	42	40	25	23	23	610	3430	1190	1790	80	27
5	22	46	39	24	23	23	690	3190	1410	1930	71	25
6	23	50	39	23	23	23	840	2810	1610	2010	63	26
7	24	49	39	23	23	23	1200	2450	1810	1770	54	26
8	24	48	39	22	23	23	1720	2170	1730	1660	50	24
9	24	47	38	22	23	23	1930	1930	1600	1570	48	24
10	24	46	38	22	23	23	2220	1730	1520	1500	43	24
11	44	44	38	22	23	23	2640	1590	1620	1350	33	24
12	42	42	37	22	23	23	3120	1520	2650	1160	44	24
13	40	41	37	22	23	23	3600	1470	3090	984	40	23
14	37	35	37	22	23	24	3820	1490	3360	819	38	23
15	35	30	37	22	23	25	3690	1400	4510	681	33	23
16	34	35	36	22	23	26	3770	1280	4800	580	30	24
17	33	32	36	22	23	28	3690	1160	4820	492	30	26
18	33	36	35	22	23	40	3500	1050	5270	426	34	26
19	33	39	34	23	23	53	3350	964	5170	375	39	26
20	33	52	34	23	23	54	3200	876	4800	333	42	25
21	33	50	33	23	23	65	2960	804	4580	294	44	25
22	33	48	33	23	23	110	2610	728	4130	255	41	22
23	33	45	32	23	23	160	2680	697	3590	228	44	21
24	33	43	31	23	23	270	2800	662	3130	206	51	20
25	33	42	30	23	23	440	2790	622	2620	188	45	20
26	33	45	30	23	23	610	2860	617	2250	168	49	20
27	33	48	29	23	23	680	2840	578	1920	151	46	22
28	33	47	29	23	23	610	4460	682	1690	134	42	24
29	35	45	28	23	---	610	5050	796	1610	110	40	23
30	37	44	27	23	---	580	5560	808	2180	102	37	23
31	40	---	26	23	---	540	---	949	---	93	32	---
TOTAL	969	1307	1085	713	644	5224	79690	51533	82270	26981	1489	729
MEAN	31.3	43.6	35.0	23.0	23.0	169	2656	1662	2742	870	48.0	24.3
MAX	44	52	43	26	23	680	5560	5190	5270	2010	84	32
MIN	22	30	26	22	23	23	545	578	1180	93	30	20
CFSM	.03	.04	.03	.02	.02	.15	2.41	1.51	2.49	.79	.04	.02
IN.	.03	.04	.04	.02	.02	.18	2.69	1.74	2.78	.91	.05	.02
AC-FT	1920	2590	2150	1410	1280	10360	158100	102200	163200	53520	2950	1450

CAL YR 1974 TOTAL 185005 MEAN 507 MAX 3790 MIN 22 CFSM .46 IN 6.26 AC-FT 367000
WTR YR 1975 TOTAL 252634 MEAN 692 MAX 5560 MIN 20 CFSM .63 IN 8.54 AC-FT 501100

NOTE.--No gage-height record Oct. 1 to Nov. 19, Aug. 6 to Sept. 30.

PEAK DISCHARGE (BASE, 1,300 FT³/S)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
4-14	1145	7.07	3,970	6-18	1145	8.07	5,320
4-30	1245	8.52	5,630	6-30	0100	6.12	3,140

05325000 Minnesota River at Mankato, Minn.

LOCATION.--Lat 44°09'54", long 94°00'45", in NE¼NE¼ sec.13, T.108 N., R.27 W., Blue Earth County, on right bank 0.2 mi (0.3 km) downstream from bridge on U.S. Highway 169 in Mankato, 1.3 mi (2.1 km) downstream from Blue Earth River and at mile 106.9 (172 km) upstream from Mississippi River.

DRAINAGE AREA.--14,900 mi² (38,600 km²), approximately.

PERIOD OF RECORD.--May 1903 to current year (no winter records 1904, 1906-10, 1918-29). Monthly discharge only for some periods, published in WSP 1308. Published as "near Mankato: 1903-21.

GAGE.--Water-stage recorder. Datum of gage is 747.92 ft (227.966 m) above mean sea level, datum of 1929. Prior to Oct. 19, 1921, nonrecording gage, at site 1.3 mi (2.1 km) upstream at datum 6.4 ft (2.0 m) higher. Mar. 15, 1922, to Nov. 30, 1924, nonrecording gage, Dec. 1, 1924, to May 24, 1971, recorder at site 0.5 mi (0.8 km) downstream at present datum.

AVERAGE DISCHARGE.--54 years (1905, 1910-17, 1929-75), 2,690 ft³/s (76.2 m³/s), 2.45 in/yr (62 mm/yr), 1,949,000 acre-ft/yr (2.40 km³/yr).

EXTREMES.--Current year: Maximum discharge, 24,100 ft³/s (683 m³/s) May 1 (gage height, 17.20 ft or 5.243 m); minimum, 95 ft³/s (2.690 m) Nov. 26 (gage height, 1.51 ft or 0.460 m).
Period of record: Maximum discharge, 94,100 ft³/s (2,660 m³/s) Apr. 10, 1965 (gage height, 29.09 ft or 8.867 m); minimum observed, 26 ft³/s (0.74 m³/s) Aug. 4, 1934.
Maximum stage known, 29.9 ft (9.11 m) Apr. 26, 1881, from floodmark, present site and datum (discharge, 90,000 ft³/s or 2,550 m³/s).

REMARKS.--Records good except those for winter periods, which are fair. Records of water-quality data for the current year are published in Section 2 of this report.

REVISIONS (WATER YEARS).--WSP 875: 1917. WSP 955: Drainage area. WSP 1085: 1929. WSP 1238: 1903, 1908, 1919. WSP 1508: 1916(M), 1918(M), 1926(M), 1928, 1930, 1932(M), 1938(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	177	339	225	172	280	310	2420	24000	5900	7720	1040	404
2	170	328	225	180	285	303	2550	23000	5990	7070	996	346
3	159	311	230	180	290	300	2620	20300	5750	6550	887	346
4	156	295	220	180	295	294	2560	18300	5510	6200	825	369
5	159	295	223	175	300	288	2620	16300	5740	6180	783	363
6	180	290	198	165	305	280	3160	14500	6490	5980	725	345
7	160	290	208	155	310	275	3900	13000	6930	5550	681	339
8	173	290	245	145	315	265	4810	11600	7120	5220	669	328
9	173	290	336	138	320	255	5550	10600	7000	4890	618	328
10	184	306	357	145	325	245	5980	9630	6350	4660	608	306
11	284	311	336	155	328	235	6890	8890	5920	4380	559	349
12	279	311	292	165	330	230	7750	8420	6830	4080	523	308
13	260	311	270	175	333	227	9220	8180	7220	3800	531	326
14	255	306	270	180	336	220	9400	8160	7800	3500	457	331
15	250	232	270	180	336	205	10000	7940	9740	3200	396	331
16	246	240	270	183	336	200	10900	7460	10500	3010	384	342
17	223	250	265	183	333	205	11900	6990	10600	2840	351	326
18	215	260	250	183	333	245	12400	6800	11000	2620	345	315
19	210	270	245	183	332	300	13300	6260	11100	2390	364	315
20	210	275	240	185	331	369	13300	5980	10700	2170	369	331
21	210	280	235	188	330	580	13100	5850	10700	1940	382	342
22	206	280	230	190	328	770	12400	5380	11500	1730	382	355
23	202	275	230	195	326	1000	12200	5070	11800	1540	396	362
24	202	270	230	205	323	1250	13000	5080	11600	1510	411	331
25	206	223	230	215	323	1560	14100	5160	10700	1450	419	326
26	206	147	225	225	320	1730	14900	5300	9840	1370	419	315
27	210	180	220	240	317	1900	15300	5290	8990	1300	396	299
28	215	230	200	250	315	2000	18700	5320	8290	1200	404	302
29	246	245	190	255	---	2150	21600	5420	7860	1130	481	337
30	279	240	185	265	---	2250	23400	5270	8770	1100	544	337
31	284	---	175	270	---	2330	---	5440	---	1040	426	---
TOTAL	6589	8170	7575	5905	8935	22771	299930	294890	254090	107350	16786	10274
MEAN	213	272	244	190	319	735	9998	9513	8470	3463	541	342
MAX	284	339	357	270	336	2330	23400	24000	11800	7720	1040	404
MIN	156	147	175	138	280	200	2420	5070	5510	1040	345	299
CFSM	.01	.02	.02	.01	.02	.05	.67	.64	.57	.23	.04	.02
IN.	.02	.02	.02	.01	.02	.06	.75	.74	.63	.27	.04	.03
AC-FT	13070	16210	15020	10	17720	45170	594900	584900	504000	212900	33300	20380

CAL YR 1974 TOTAL 761078 MEAN 2085 MAX 12500 MIN 147 CFSM .14 IN 1.90 AC-FT 1510000
WTR YR 1975 TOTAL 1043265 MEAN 2858 MAX 24000 MIN 138 CFSM .19 IN 2.60 AC-FT 2069000

05327000 High Island Creek near Henderson, Minn.

LOCATION.--Lat 44°34'19", long 93°55'18", in NE¼NW¼ sec.26, T.113 N., R.26 W., Sibley County, on left bank 20 ft (6.1 m) downstream from bridge on County Road 6, 1.6 mi (2.6 km) upstream from mouth, and 3.1 mi (5.0 km) north of Henderson.

DRAINAGE AREA.--237 mi² (614 km²).

PERIOD OF RECORD.--October 1973 to current year. May 1970 to September 1973, operated as a low-flow station only.

GAGE.--Water-stage recorder. Datum of gage is 726.56 ft (222.065 m) above mean sea level, datum of 1929.

EXTREMES.--Current year: Maximum discharge, 3,520 ft³/s (99.7 m³/s) Apr. 28 (gage height, 8.22 ft or 2.505 m, from floodmark), from rating curve extended above 500 ft³/s (14.2 m³/s); minimum daily, 1.1 ft³/s (0.03 m³/s) Dec. 10, 11, Jan. 17-26; minimum gage height, 1.35 ft (0.411 m) Aug. 13-16, 18-20, 28.

Period of record: Maximum of discharge, 3,520 ft³/s (99.7 m³/s) Apr. 28, 1975 (gage height, 8.22 ft or 2.505 m, from floodmark), from rating curve extended above 500 ft³/s (14.2 m³/s); minimum, 0.88 ft³/s (.02 m³/s) Sept. 12, 14, 1974; minimum gage height, 1.35 ft (0.412 m) Aug. 13-16, 18-20, 28, 1975.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	2.5	2.5	1.6	1.3	3.1	4.7	700	79	318	7.5	1.9
2	1.6	2.5	2.2	1.6	1.3	3.4	4.7	630	87	267	7.1	1.6
3	1.6	2.4	1.9	1.6	1.4	3.4	4.4	560	95	230	6.0	1.6
4	2.2	2.3	1.9	1.9	1.4	3.7	4.3	510	100	201	5.6	1.4
5	2.2	2.2	1.9	1.9	1.4	4.0	4.7	465	95	171	5.0	1.4
6	2.8	2.0	1.9	1.9	1.4	4.0	4.8	420	84	140	4.4	1.4
7	2.8	2.0	1.9	1.9	1.4	4.0	6.5	380	72	111	4.1	1.4
8	2.5	2.0	1.6	1.9	1.4	4.0	7.7	340	60	90	3.7	1.4
9	2.5	2.0	1.3	1.9	1.4	4.7	8.0	306	52	76	3.4	1.3
10	2.2	2.1	1.1	1.9	1.6	4.7	8.3	258	49	72	3.1	1.3
11	2.2	2.2	1.1	1.4	1.9	4.7	10	217	51	73	2.8	1.6
12	1.6	2.3	1.4	1.3	1.9	4.7	15	186	62	75	2.8	1.6
13	1.4	2.4	1.4	1.3	1.9	5.0	31	164	51	76	2.8	1.6
14	1.4	2.5	1.6	1.3	1.9	5.0	64	146	45	73	2.2	1.6
15	1.4	2.2	1.6	1.3	1.9	5.0	77	128	115	69	2.2	1.6
16	1.4	2.2	1.9	1.3	2.2	5.0	86	111	98	60	2.5	1.4
17	1.6	2.2	1.9	1.1	2.5	5.3	214	95	86	52	2.8	1.4
18	1.6	2.2	1.9	1.1	2.8	6.3	382	80	86	45	2.8	1.6
19	1.6	2.2	1.9	1.1	2.8	7.5	279	70	75	36	2.2	1.6
20	1.6	2.2	1.9	1.1	2.8	8.4	199	65	72	29	1.9	1.6
21	1.6	2.2	1.9	1.1	2.8	11	168	58	84	24	2.2	1.6
22	1.6	2.2	1.9	1.1	2.8	14	186	54	179	21	2.2	1.4
23	1.6	2.5	1.9	1.1	2.8	19	1200	50	164	19	2.2	1.6
24	1.6	2.5	1.6	1.1	2.8	13	766	47	130	19	2.2	1.9
25	1.6	2.5	1.6	1.1	2.8	7.5	396	43	122	16	2.2	2.5
26	1.7	2.5	1.6	1.1	2.8	7.1	315	41	160	15	1.9	1.9
27	1.7	2.2	1.6	1.3	2.8	4.7	1000	40	243	13	1.6	2.2
28	1.9	2.2	1.6	1.3	3.1	5.6	1800	40	357	12	1.6	3.4
29	2.2	2.2	1.6	1.3	---	5.6	1000	43	416	9.9	1.9	3.7
30	2.3	2.5	1.6	1.3	---	5.3	780	54	390	9.4	1.9	4.1
31	2.4	---	1.6	1.3	---	5.6	---	68	---	8.4	1.9	---
TOTAL	58.0	68.1	53.3	43.5	59.3	194.3	9026.1	6369	3759	2430.7	96.7	54.6
MEAN	1.87	2.27	1.72	1.40	2.12	6.27	301	205	125	78.4	3.12	1.82
MAX	2.8	2.5	2.5	1.9	3.1	19	1800	700	416	318	7.5	4.1
MIN	1.4	2.0	1.1	1.1	1.3	3.1	4.3	40	45	8.4	1.6	1.3
AC-FT	115	135	106	86	118	385	17900	12630	7460	4820	192	108

CAL YR 1974 TOTAL 13649.17 MEAN 37.4 MAX 426 MIN .91 AC-FT 27070
WTR YR 1975 TOTAL 22212.60 MEAN 60.9 MAX 1800 MIN 1.1 AC-FT 44060

NOTE.--No gage-height record Apr. 27 to May 7.

05330000 Minnesota River near Jordan, Minn.

LOCATION.--Lat 44°41'35", long 93°38'30", in NW¼SW¼ sec.7, T.114 N., R.23 W., Carver County, on left bank 1.5 mi (2.4 km) northwest of Jordan and at mile 39.4 (63.4 km) upstream from Mississippi River.

DRAINAGE AREA.--16,200 mi² (42,000 km²), approximately.

PERIOD OF RECORD.--September 1934 to current year. Prior to Oct. 1, 1966, published as "near Carver, Minn".

GAGE.--Water-stage recorder. Datum of gage is 690.00 ft (210.31 m) above mean sea level, datum of 1929. Prior to Oct. 1, 1966, water-stage recorder 2.8 mi (4.5 km) downstream with auxiliary nonrecording gage at present site and same datum.

AVERAGE DISCHARGE.--41 years, 3,412 ft³/s (96.6 m³/s), 2.86 in/yr (73 mm/yr), 2,472,000 acre-ft/yr (3.05 km³/yr).

EXTREMES.--Current year: Maximum daily discharge, 22,900 ft³/s (648 m³/s) May 3 (gage height, 23.77 ft or 7.245 m); minimum, 204 ft³/s (5.78 m³/s) Oct. 2 (gage height, 3.43 ft or 1.045 m).
Period of record: Maximum discharge, 117,000 ft³/s (3,310 m³/s) Apr. 11, 1965; maximum gage height, 35.07 ft (10.689 m) Apr. 12, 1965 (backwater from Mississippi River); minimum discharge, 79 ft³/s (2.24 m³/s) Nov. 17, 1955; minimum gage height, 2.66 ft (0.811 m) Nov. 22, 1935.

REMARKS.--Records good except those for winter periods, which are fair. Water-quality data for the current year are published in Section 2 of this report.

REVISIONS (WATER YEARS).--WSP 955: Drainage area. WSP 1508: 1935.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	223	452	370	369	320	480	2200	22400	5900	11600	1260	673
2	234	421	400	353	325	470	2300	22700	6270	10900	1250	601
3	277	415	390	328	330	465	2400	22900	6490	9860	1240	574
4	296	389	375	328	340	455	2570	22500	6320	8860	1170	560
5	274	379	370	328	345	450	2690	21400	5970	8140	1080	563
6	262	379	375	328	350	445	2780	20100	5940	7780	1020	538
7	277	405	380	325	355	440	3030	18900	6460	7460	970	518
8	298	431	390	320	360	435	3490	18000	6990	6960	925	489
9	283	430	287	305	370	430	3900	17000	7280	6450	893	473
10	303	433	335	305	375	425	4550	15700	7370	6020	860	469
11	337	438	475	300	385	420	5110	14400	7000	5660	838	474
12	324	422	551	295	400	410	6080	12900	6900	5290	815	483
13	344	411	613	280	400	410	7120	11600	7510	4910	807	504
14	360	411	599	270	410	410	8770	10600	8040	4570	797	517
15	330	405	549	265	420	410	9870	10000	8920	4230	780	506
16	343	394	547	260	430	410	10400	9580	10500	3890	741	490
17	361	414	573	260	440	410	11200	9020	11800	3630	702	484
18	380	367	543	260	450	410	12500	8380	12400	3400	641	501
19	307	399	551	265	460	415	13200	7790	12800	3170	616	481
20	292	411	548	265	470	435	13600	7340	13000	2920	620	471
21	305	412	544	270	480	495	13900	6940	13100	2680	642	458
22	325	440	451	270	495	580	14100	6540	13400	2440	654	454
23	312	459	415	275	500	600	14600	6260	14100	2220	653	462
24	316	436	509	280	500	880	15200	6040	14600	2030	654	464
25	299	419	445	280	495	1100	15800	5900	14900	1870	651	453
26	302	370	362	285	490	1200	16100	6040	14900	1750	626	450
27	315	310	380	290	485	1350	16800	6140	14700	1640	600	440
28	331	310	398	295	480	1650	17700	6020	13900	1540	587	430
29	354	315	435	300	---	1750	19400	5940	12700	1460	610	430
30	398	340	393	310	---	1900	21200	6010	11800	1360	619	437
31	419	---	370	315	---	2100	---	5880	---	1310	641	---
TOTAL	9741	12017	13931	9179	11660	22240	292560	370920	301960	146000	24962	14845
MEAN	314	401	449	296	416	717	9752	11970	10070	4710	805	495
MAX	419	459	613	369	500	2100	21200	22900	14900	11600	1260	673
MIN	223	310	287	260	320	410	2200	5880	5900	1310	587	430
CFSM	.02	.02	.03	.02	.03	.04	.60	.74	.62	.29	.05	.03
IN.	.02	.03	.03	.02	.03	.05	.67	.85	.69	.34	.06	.03
AC-FT	19320	23840	27630	18210	23130	44110	580300	735700	598900	289600	49510	29450

CAL YR 1974 TOTAL 914562 MEAN 2506 MAX 13800 MIN 223 CFSM .15 IN 2.10 AC-FT 1814000
WTR YR 1975 TOTAL 1230015 MEAN 3370 MAX 22900 MIN 223 CFSM .21 IN 2.82 AC-FT 2440000

05331000 Mississippi River at St. Paul, Minn.

LOCATION.--Lat 44°56'40", long 93°05'20", in SE¼NE¼ sec.6, T.28 N., R.22 W., Ramsey County, on left bank in St. Paul, 300 ft (91 m) upstream from Robert Street Bridge, 6 mi (10 km) downstream from Minnesota River, and at mile 839.3 (1,350 km) upstream from Ohio River.

DRAINAGE AREA.--36,800 mi² (95,300 km²), approximately.

PERIOD OF RECORD.--Water year 1867-69, 1872-92 (annual maximum), March 1892 to current year (prior to 1901, fragmentary during some winters). Records prior to March 1892, published in the 19th Annual Report, Part 4, have been found to be unreliable and should not be used. Monthly discharge only for some periods, published in WSP 1308. Gage-height records (winter records incomplete) collected at same site since 1866 are contained in reports of U.S. Weather Bureau, War Department and Mississippi River Commission.

GAGE.--Water-stage recorder. Datum of gage is 683.62 ft (208.367) above mean sea level, datum of 1929. Prior to Mar. 18, 1925, nonrecording gage at several sites within 300 ft (91 m) of present site at same datum. Mar. 18, 1925, to Mar. 10, 1933, water-stage recorder and Mar. 11, 1933, to Sept. 14, 1939, nonrecording gage, at present site and datum. Since September 1938, auxiliary water-stage recorder 5.6 mi (9.0 km) downstream.

AVERAGE DISCHARGE (ADJUSTED FOR DIVERSION).--77 years (1894-95, 1896-97, 1900-75), 10,580 ft³/s (299.6 m³/s), 3.90 in/yr (99 mm/yr).

EXTREMES.--Current year: Maximum discharge, 78,300 ft³/s (2,220 m³/s) May 4 (gage height, 15.67 ft or 4.776 m); minimum daily, 1,450 ft³/s (41.1 m³/s) Jan. 12.

Period of record (1867-70, 1872-1975): Maximum discharge, 171,000 ft³/s (4,840 m³/s) Apr. 16, 1965 (gage height, 26.01 ft or 7.928 m, from floodmark).

Period of record (1897, 1917-75): Minimum daily discharge, 632 ft³/s (17.9 m³/s) Aug. 26, 1934.

Maximum flood known since at least 1851, 171,000 ft³/s (4,840 m³/s) Apr. 16, 1965 (gage height, 26.01 ft or 7.928 m, from floodmark). Flood of Apr. 11, 1870 reached a stage of 19.4 ft (5.9 m), discharge, 100,000 ft³/s (2,830 m³/s).

REMARKS.--Records good. Records of water-quality data for the current year are published in Section 2 of this report. Slight regulation except during extreme floods by reservoirs on headwaters and by powerplants. Beginning July 20, 1938, sewage from Minneapolis and St. Paul, which formerly entered above station, was diverted to a sewage-disposal plant, thence to river below station. Figures of daily discharge do not include this diversion.

COOPERATION.--Records of Mississippi River at Twin City lock and dam computed and furnished by Ford Motor Co. Diversion through sewage disposal plant furnished by Metropolitan Waste Control Commission.

REVISIONS (WATER YEARS).--WSP 285: 1892-96. WSP 715: Drainage area. WSP 875: 1938. WSP 895: 1939. WSP 1308: 1867(M). WSP 1508: 1897, 1898(M), 1903(M), 1917-18(M), 1928(M), 1929. WRD MINN 1974: 1973.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2180	6580	4350	5240	5250	5540	9120	72600	24900	37100	10100	6790
2	2440	4820	6030	4320	5750	5490	9140	75300	24100	38900	10800	5800
3	2510	5640	5610	4950	5440	5550	9040	77300	23900	38200	9950	7460
4	2800	6790	5040	5020	5420	5510	9540	78100	23500	37500	9540	6010
5	2290	7620	5190	4290	5390	5390	9550	77400	22600	38100	9220	5870
6	2420	7780	4760	4620	5190	5420	9870	75400	21200	37100	8180	6140
7	2850	8410	5200	5330	5110	5540	10500	72400	20000	36800	7740	6200
8	3100	9140	4470	5000	5350	5320	10400	69300	20000	35100	6980	6090
9	3420	8770	3920	5840	5380	5490	11100	65700	20100	33700	6570	5990
10	3000	8830	3450	5130	5160	5630	11400	62000	20100	31900	6600	6200
11	2930	9150	4430	3570	5310	5460	12400	58400	21100	30500	6400	6880
12	3020	9380	5500	1450	5460	5660	13700	55200	21500	29000	6260	5830
13	2960	6420	6240	2900	5320	5530	15200	52000	21100	27500	6160	6330
14	3300	7910	5150	3320	5470	5330	16500	48200	21500	26000	5940	6310
15	3750	7780	5050	3910	5540	5640	19000	45400	21700	24800	5960	6310
16	3770	6730	4710	4170	5740	5570	22300	43500	23600	24000	5540	5750
17	4320	6960	5090	5140	5760	5570	25500	41300	26200	22400	5630	5790
18	4620	6830	4180	5300	5600	5930	30200	39200	27900	21000	5610	6420
19	4100	7090	4560	5000	5940	5910	34600	37600	28100	19400	5460	6360
20	4340	6680	4860	4750	5360	5920	38600	36100	29300	17600	7140	6540
21	3670	7300	4820	4830	5420	6190	43600	34500	32100	16700	6140	6680
22	3200	7270	4800	4720	5600	6880	49400	31700	32200	15200	6050	6520
23	3290	7150	4910	5150	5460	8420	55600	29000	33700	14600	7600	6200
24	3670	6290	4370	5500	5420	8880	57600	29000	35200	14000	7420	6310
25	4140	6540	3620	5840	5330	7880	59200	29200	35400	13900	6900	6470
26	4090	5190	3240	5650	5640	7120	60600	29500	35800	12600	6930	6300
27	3910	5390	4780	5360	5540	6390	64700	29100	36200	11900	6580	5800
28	3670	5110	5640	5290	5650	7100	66900	28400	35900	11000	7120	6090
29	3930	4840	5250	5370	---	8230	69000	27300	35600	10700	6690	6340
30	4220	3840	5010	5340	---	8630	70900	26300	34700	10600	7020	6180
31	4240	---	4870	5200	---	8580	---	25700	---	10200	7020	---
TOTAL	106150	208330	149100	147500	153060	195700	925160	1502300	809200	749400	221240	187960
MEAN	3424	6944	4810	4758	5466	6313	30840	48460	26970	24170	7137	6265
MAX	4620	9380	6240	5840	5940	8880	70900	78100	36200	38900	10800	7460
MIN	2180	3840	3240	1450	5110	5320	9040	25700	20000	10200	5460	5750
(†)	298	279	264	270	273	294	341	327	367	355	346	308
MEAN ‡	3722	7223	5074	5028	5739	6607	31180	48790	27340	24520	7483	6573
CFSM ‡	0.10	0.20	0.14	0.14	0.16	0.18	0.85	1.33	0.74	0.67	0.20	0.18
IN. ‡	0.12	0.22	0.16	0.16	0.17	0.21	0.95	1.53	0.83	0.77	0.23	0.20

CAL YR 1974 TOTAL 4280120 MEAN 11730 MAX 39400 MIN 2180 MEAN ‡ 12040 CFSM ‡ 0.33 IN. ‡ 4.48
WTR YR 1975 TOTAL 5355100 MEAN 14670 MAX 78100 MIN 1450 MEAN ‡ 14980 CFSM ‡ 0.41 IN. ‡ 5.56

† Diversion equivalent in cubic feet per second, through sewage disposal plant.
‡ Adjusted for diversion.

05336700 Kettle River below Sandstone, Minn.

LOCATION.--Lat 46°06'20", long 92°51'50", in NW¼SW¼ sec.22, T.42 N., R.20 W., Pine County, on left bank about 900 ft (274 m) downstream from abandoned powerplant dam, on Sandstone Federal Correctional institution property, 1.8 mi (2.9 km) south of Sandstone.

DRAINAGE AREA.--863 mi^2 (2,240 km^2).

PERIOD OF RECORD.--October 1967 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 930 ft (283 m) (from topographic map).

AVERAGE DISCHARGE.--8 years, 802 ft^3/s (22.7 m^3/s), 12.62 in/yr (321 mm/yr).

EXTREMES.--Current year: Maximum discharge, 11,600 ft^3/s (329 m^3/s) Apr. 24 (gage height, 12.34 ft or 3.761 m); minimum, 112 ft^3/s (3.17 m^3/s) Aug. 24 (gage height, 4.00 ft or 1.219 m).

Period of record: Maximum discharge, 17,200 ft^3/s (487 m^3/s) July 23, 1972 (gage height, 15.38 ft or 4.688 m); minimum, 62 ft^3/s (1.76 m^3/s) Jan. 14-19, 1971.

Flood in April 1965 reached a stage of 12.96 ft (3.950 m), from floodmark (discharge, 13,400 ft^3/s, or 379 m^3/s).

REMARKS.--Records good except those for winter period and period of no gage-height record, which are fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	130	293	226	150	170	176	268	6780	306	3220	163	135
2	130	528	219	150	168	178	268	5710	282	3480	169	125
3	130	691	212	150	165	180	262	4830	266	5510	153	125
4	136	684	203	150	163	180	255	4190	251	5700	150	122
5	136	629	200	150	160	185	255	3590	251	4420	153	125
6	145	581	195	150	158	185	255	3040	255	3450	150	130
7	150	568	190	150	155	188	247	2540	251	2820	145	147
8	160	515	186	150	153	190	255	2160	240	2200	136	148
9	160	484	183	150	150	192	255	1840	226	1700	130	153
10	163	472	181	150	150	194	255	1550	219	1400	128	153
11	163	460	180	150	150	196	259	1330	212	1110	128	148
12	163	460	178	150	150	198	293	1150	314	932	122	142
13	160	440	176	160	150	200	335	1010	818	779	120	140
14	160	423	172	180	150	202	420	899	1010	663	120	134
15	163	388	170	190	150	205	622	810	1150	566	120	133
16	163	349	169	200	150	208	1100	742	1550	496	120	136
17	163	350	168	205	152	210	2690	677	1470	431	120	132
18	163	337	165	200	155	215	4180	615	1600	384	120	151
19	166	330	165	200	155	220	5840	566	1750	343	120	161
20	166	331	165	197	158	225	7060	541	1340	310	125	169
21	166	325	165	193	160	230	8700	554	1520	282	133	176
22	169	321	165	190	163	250	8680	720	1700	259	133	190
23	169	318	165	188	165	270	9930	698	2090	240	139	198
24	172	296	165	185	168	300	11300	690	1600	226	133	192
25	172	245	165	183	170	300	10200	691	1210	199	150	183
26	169	247	165	180	172	290	8970	609	1000	192	150	175
27	166	250	165	180	172	290	7810	515	1040	179	145	166
28	169	247	162	176	175	280	6900	454	1030	176	144	160
29	169	246	160	175	---	275	6560	403	1350	169	145	158
30	179	232	155	173	---	268	7090	366	3220	163	145	153
31	199	---	150	170	---	268	---	331	---	160	139	---
TOTAL	4969	12020	5485	5327	4457	6950	112594	50611	29401	42281	4251	4562
MEAN	160	401	177	172	159	224	3746	1633	980	1364	137	152
MAX	199	691	226	205	175	300	11300	6780	3220	5700	169	198
MIN	130	232	150	150	150	176	247	331	212	160	120	122
CFSM	.19	.46	.21	.20	.18	.26	4.34	1.89	1.14	1.58	.16	.18
IN.	.21	.52	.24	.23	.19	.30	4.84	2.18	1.27	1.82	.18	.20

CAL YR 1974 TOTAL 248346 MEAN 680 MAX 5320 MIN 130 CFSM .79 IN 10.71
WTR YR 1975 TOTAL 282708 MEAN 775 MAX 11300 MIN 120 CFSM .90 IN 12.19

NOTE.--No gage-height record Feb. 27 to Apr. 1.

05337400 Knife River near Mora, Minn.

LOCATION.--Lat 45°55'12", long 93°18'26", in SW¼SW¼ sec.26, T.40 N., R.24 W., Kanabec County, on left bank 400 ft (122 m) upstream from bridge on County Highway 77, 1.1 mi (1.8 km) upstream from mouth and 2.5 mi (4.0 km) north of Mora.

DRAINAGE AREA.--102 mi² (264 km²).

PERIOD OF RECORD.--Occasional low-flow measurements, water years 1969-74; July 1974 to current year.

GAGE.--Water-stage recorder. Datum of gage is 991.20 ft (302.118 m) above mean sea level, datum of 1929 (Kanabec County bench mark).

EXTREMES.--July to September 1974: Maximum discharge during period, 34 ft³/s (0.96 m³/s) Aug. 21 (gage height, 2.39 ft or 0.728 m); minimum, 3.6 ft³/s (0.10 m³/s) Aug. 1, 2 (gage height, 1.67 ft or 0.509 m).
Water year 1975: Maximum discharge, 1,470 ft³/s (41.6 m³/s) Apr. 28 (gage height, 6.02 ft or 1.835 m), minimum daily, 3.8 ft³/s (0.108 m³/s).
Flood of July 26, 1972, reached a stage of 14.0 ft (4.267 m), from information by local resident (discharge not determined). Result of dam failure and backwater from collapsed bridge.

REMARKS.--Records fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1										---	3.7	5.6
2										---	10	5.3
3										---	27	5.3
4										---	22	4.8
5										---	20	4.6
6										---	17	4.9
7										---	16	4.9
8										---	14	5.1
9										---	12	9.1
10										16	11	10
11										13	12	9.2
12										11	17	9.0
13										12	17	9.8
14										14	15	8.4
15										11	13	7.5
16										9.4	12	7.4
17										8.7	11	6.4
18										9.6	10	6.7
19										9.0	8.6	5.8
20										8.2	7.5	5.8
21										6.2	30	5.6
22										5.6	25	5.4
23										4.7	21	5.1
24										7.2	16	4.8
25										11	13	4.7
26										10	11	4.7
27										8.0	9.6	4.6
28										6.2	7.5	5.5
29										5.1	6.8	6.6
30										4.5	6.2	4.2
31										4.0	5.5	---
TOTAL											427.4	184.8
MEAN											13.8	6.16
MAX											30	10
MIN											3.7	4.2
CFSM											.14	.06
IN.											.16	.07
AC-FT											848	367

05337400 Knife River near Mora, Minn.--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.2	33	16	16	14	11	22	958	19	235	7.8	7.0
2	4.1	35	16	16	14	11	22	711	19	488	9.0	7.0
3	4.1	30	16	17	14	11	22	530	23	1220	8.7	6.3
4	4.2	29	16	17	14	11	21	403	22	924	11	5.6
5	5.3	24	16	17	14	11	20	323	23	596	10	5.4
6	5.9	20	16	18	14	11	20	251	21	412	8.0	5.7
7	5.8	18	16	18	14	12	19	202	18	289	5.8	8.7
8	5.9	16	16	17	14	12	18	170	14	210	4.7	8.6
9	6.2	16	16	17	14	12	18	145	15	159	4.2	7.3
10	5.7	15	16	16	14	12	19	125	16	126	4.2	7.1
11	6.7	16	16	16	14	12	20	110	21	101	4.2	8.3
12	7.0	15	15	16	13	12	21	91	51	88	4.0	7.1
13	5.2	15	15	16	13	12	24	76	58	65	4.0	6.0
14	4.8	13	15	16	13	12	34	71	64	55	3.8	5.5
15	5.3	16	15	15	13	12	53	63	74	46	3.8	4.9
16	4.6	14	15	15	13	12	100	54	72	40	3.8	5.0
17	5.0	14	15	15	13	12	246	45	75	33	3.9	4.8
18	5.3	14	16	15	13	12	506	45	83	29	3.9	6.6
19	5.1	14	16	15	12	12	868	28	83	25	3.8	7.9
20	5.0	14	15	15	12	13	1150	27	78	21	4.5	9.8
21	4.7	15	14	15	12	13	1010	22	135	18	4.7	12
22	4.7	15	14	15	12	14	999	27	204	16	4.5	11
23	5.1	15	14	15	12	15	1240	26	190	13	6.2	11
24	4.9	15	13	15	12	17	1220	25	139	15	6.7	9.4
25	5.0	15	14	15	12	20	946	28	104	13	9.0	8.3
26	5.3	15	15	15	12	21	714	21	84	11	7.6	7.9
27	5.0	15	16	15	12	21	1020	19	80	9.8	6.7	7.7
28	5.3	15	15	15	12	22	1380	24	75	8.7	8.2	7.2
29	6.5	15	14	15	---	22	1210	24	91	7.3	10	7.2
30	8.1	15	15	16	---	22	1180	22	162	6.8	8.8	7.0
31	10	---	16	16	---	22	---	19	---	6.8	7.5	---
TOTAL	168.0	531	473	486	365	444	14142	4685	2113	5287.4	193.0	223.3
MEAN	5.42	17.7	15.3	15.7	13.0	14.3	471	151	70.4	171	6.23	7.44
MAX	10	35	16	18	14	22	1380	958	204	1220	11	12
MIN	4.1	13	13	14	12	11	18	19	14	6.8	3.8	4.8
CFSM	.05	.17	.15	.15	.13	.14	4.62	1.48	.69	1.68	.06	.07
IN.	.06	.19	.17	.18	.13	.16	5.16	1.71	.77	1.93	.07	.08
AC-FT	333	1050	938	964	724	881	28050	9290	4190	10490	383	443

WTR YR 1975 TOTAL 29110.7 MEAN 79.8 MAX 1380 MIN 3.8 CFSM .78 IN 10.62 AC-FT 57740

05338500 Snake River near Pine City, Minn.

LOCATION.--Lat 45°50'30", long 92°56'00", in SE¼NW¼ sec.26, T.39 N., R.21 W., Pine County, on left bank at site of former powerplant and dam, 0.5 mi (0.8 km) downstream from Cross Lake and 1.5 mi (2.4 km) northeast of Pine City.

DRAINAGE AREA.--958 mi² (2,480 km²).

RECORDS AVAILABLE.--June 1913 to September 1917, July 1951 to current year.

GAGE.--Water-stage recorder. Datum of gage is 919.00 ft (280.111 m) above mean sea level, datum of 1929. June 25, 1913, to Sept. 30, 1917, nonrecording gage at site 500 ft (152 m) downstream at different datum. July 1 to Oct. 28, 1951, nonrecording gage at present site and datum.

AVERAGE DISCHARGE.--28 years, 608 ft³/s (17.2 m³/s), 8.62 in/yr (219 mm/yr).

EXTREMES.--Current year: Maximum discharge, 9,400 ft³/s (266 m³/s) May 2 (gage height, 8.56 ft or 2.609 m); maximum gage height, 8.68 ft (2.646 m) Apr. 30; minimum discharge, 60 ft³/s (1.70 m³/s) Oct. 3 (gage height, 2.92 ft or 0.890 m).
Period of record: Maximum discharge, 14,300 ft³/s (405 m³/s) July 27, 1972 (gage height, 10.38 ft or 3.164 m); minimum, 5.5 ft³/s (0.16 m³/s) Oct. 1, 1964 (gage height, 2.57 ft or 0.783 m), result of dam rehabilitation 0.5 mi (0.8 km) upstream.
A discharge measurement of 12,500 ft³/s (354 m³/s) was made May 9, 1950.

REMARKS.--Records good except those for winter periods, which are fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	71	273	191	130	164	158	223	9070	376	2730	153	201
2	73	354	183	128	157	153	223	9150	328	2970	193	161
3	70	401	175	140	153	147	222	8370	304	3320	160	180
4	78	431	171	132	155	142	219	7460	269	3720	166	150
5	110	440	172	127	162	143	224	6500	287	4420	153	162
6	134	428	168	135	164	142	223	5580	258	5230	144	144
7	112	399	166	133	164	142	225	4710	224	5760	125	184
8	120	373	152	139	164	140	230	3900	224	5830	125	150
9	112	351	131	144	180	140	242	3160	213	5550	118	138
10	108	337	132	158	185	139	252	2570	213	5000	123	149
11	127	339	131	169	185	137	265	2090	235	4360	101	168
12	109	314	128	174	169	149	294	1690	364	3650	95	147
13	108	289	135	174	169	137	347	1430	449	2930	94	124
14	144	291	135	174	161	132	454	1210	594	2340	79	119
15	111	263	149	170	152	132	701	1010	770	1840	76	118
16	119	242	154	166	147	130	1300	832	875	1430	100	115
17	110	237	151	161	147	127	2310	708	966	1110	122	109
18	103	236	147	160	151	133	3420	622	1040	871	100	197
19	101	235	150	160	160	140	4310	563	1050	711	89	214
20	100	232	147	161	159	149	5000	505	1080	571	111	213
21	97	227	147	169	154	166	5640	476	1120	473	138	203
22	107	225	151	169	154	183	6200	435	1160	404	108	199
23	109	232	152	162	152	201	6720	455	1240	358	104	198
24	117	230	148	162	152	224	7010	497	1340	330	220	199
25	110	203	145	164	127	224	7280	547	1400	276	267	199
26	111	181	141	166	153	211	7510	652	1410	251	230	193
27	108	188	138	161	159	225	7820	629	1380	234	194	182
28	110	187	136	164	158	231	7970	574	1220	203	234	182
29	123	189	137	169	---	230	8090	517	1820	181	228	174
30	139	193	137	174	---	230	8720	465	2470	160	216	186
31	149	---	135	169	---	222	---	409	---	149	203	---
TOTAL	3400	8520	4635	4864	4457	5159	93644	76786	24679	67362	4649	5058
MEAN	110	284	150	157	159	166	3121	2477	823	2173	150	169
MAX	149	440	191	174	185	231	8720	9150	2470	5830	267	214
MIN	70	181	128	127	127	127	219	409	213	149	76	109
CFSM	.11	.30	.16	.16	.17	.17	3.26	2.59	.86	2.27	.16	.18
IN.	.13	.33	.18	.19	.17	.20	3.64	2.98	.96	2.62	.18	.20
AC-FT	6740	16900	9190	9650	8840	10230	185700	152300	48950	133600	9220	10030

CAL YR 1974 TOTAL 196594 MEAN 539 MAX 4260 MIN 70 CFSM .56 IN 7.63 AC-FT 389900
WTR YR 1975 TOTAL 303213 MEAN 831 MAX 9150 MIN 70 CFSM .87 IN 11.77 AC-FT 601400

05340050 Sunrise River near Lindstrom, Minn.

LOCATION.--Lat 45°27'00", long 92°53'10", in SW¼NE¼ sec.7, T.34 N., R.20 W., Chisago County, on left bank 20 ft (6 m) downstream from highway bridge and 4.5 mi (7.2 km) northwest of Lindstrom.

DRAINAGE AREA.--231 mi^2 (598 km^2).

PERIOD OF RECORD.--July 1965 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 850 ft (259 m), from topographic map.

AVERAGE DISCHARGE.--10 years, 94.9 ft^3/s (2.688 m^3/s), 5.58 in/yr (142 mm/yr).

EXTREMES.--Current year: Maximum discharge, 745 ft^3/s (21.1 m^3/s) July 3 (gage height, 7.65 ft or 2.332 m); minimum, 21 ft^3/s (0.59 m^3/s) Oct. 1, 2; minimum gage height, 2.56 ft (0.780 m) Oct. 1.
Period of record: Maximum discharge, 745 ft^3/s (21.1 m^3/s) July 3, 1975 (gage height, 7.65 ft or 2.332 m); minimum, 4.5 ft^3/s (0.13 m^3/s) Oct. 3, 1971 (gage height, 1.98 ft or 0.604 m)

REMARKS.--Records good except those for winter periods, which are fair. Some regulation by Minnesota Game and Fish Wildlife Refuge ponds above the station. At high stages a small part of flow discharges into the Rum River and Coon Creek basins from West Arm of Coon Lake and South Coon Lake, respectively.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	38	32	41	40	68	39	610	211	615	55	90
2	21	35	31	41	40	67	38	620	202	630	71	88
3	22	34	31	41	40	66	38	602	194	724	67	86
4	22	34	31	41	40	65	38	588	164	724	71	84
5	23	33	32	41	41	64	38	574	174	695	70	83
6	27	34	51	41	41	64	38	552	162	685	68	83
7	26	34	50	41	42	64	39	534	149	655	67	91
8	25	35	49	41	43	64	41	516	138	615	64	91
9	24	35	48	41	44	64	45	495	130	590	61	92
10	25	36	45	40	45	64	52	474	122	570	58	101
11	25	37	42	40	46	64	60	458	130	555	56	118
12	23	38	40	40	48	62	80	436	202	531	55	120
13	23	37	45	40	50	60	118	422	247	501	53	118
14	24	38	62	40	52	50	146	410	269	474	51	122
15	24	38	61	40	54	43	174	392	287	448	50	124
16	24	36	59	40	56	38	200	371	298	416	48	122
17	23	36	56	40	58	36	227	354	302	383	48	120
18	23	36	52	40	60	42	255	332	302	352	46	121
19	23	38	49	40	63	43	269	314	302	320	45	121
20	22	38	46	40	65	45	270	304	298	293	49	117
21	24	37	44	40	67	46	269	280	315	266	48	118
22	23	37	42	40	69	46	266	244	339	242	47	116
23	22	37	42	40	70	45	317	226	339	220	114	110
24	23	36	42	40	71	45	358	234	342	202	121	105
25	22	36	42	40	71	45	347	233	359	184	124	102
26	23	35	42	40	72	44	329	239	390	167	118	98
27	23	34	42	40	71	43	440	236	495	145	55	97
28	24	33	42	40	70	43	635	233	495	121	82	95
29	25	33	42	40	---	41	615	232	513	71	105	93
30	27	32	41	40	---	40	598	227	598	60	96	91
31	27	---	41	40	---	40	---	219	---	55	91	---
TOTAL	733	1070	1374	1249	1529	1611	6379	11959	8488	12513	2154	3117
MEAN	23,6	35,7	44,3	40,3	54,6	52,0	213	386	283	404	69,5	104
MAX	27	38	62	41	72	68	635	620	598	724	124	124
MIN	21	32	31	40	40	36	38	219	122	55	45	83

CAL YR 1974 TOTAL 33028 MEAN 90,5 MAX 376 MIN 20
WTR YR 1975 TOTAL 52176 MEAN 143 MAX 724 MIN 21

05340500 St. Croix River at St. Croix Falls, Wis.

LOCATION.--Lat 45°24'25", long 92°38'49", in NW¼ sec.30, T.34 N., R.18 W., Polk County, on left bank, 1,800 ft (550 m) downstream from powerplant of Northern States Power Co., in St. Croix Falls, and at mile 52.2 (84.0 km).

DRAINAGE AREA.--5,930 mi² (15,360 km²), approximately.

PERIOD OF RECORD.--January 1902 to current year. Prior to January 1910, monthly discharge only, published in WSP 1308. Prior to October 1939, published as "near St. Croix Falls."

GAGE.--Water-stage recorder. Datum of gage is 689.94 ft (210.294 m) above mean sea level. Prior to July 1905, gage heights and discharge measurements were used by Loweth and Wolff, consulting engineers of St. Paul, Minn., to determine the flow. July 1905 to February 1940, records were computed from power generation at the St. Croix Falls powerplant.

AVERAGE DISCHARGE.--73 years, 4,192 ft³/s (118.7 m³/s), 9.60 in/yr (244 mm/yr).

EXTREMES.--Current year: Maximum discharge, 34,200 ft³/s (968 m³/s) Apr. 25 (gage height, 15.94 ft or 4.858 m); minimum daily, 1,680 ft³/s (47.6 m³/s) Aug. 19.

Period of record: Maximum discharge, 54,900 ft³/s (1,550 m³/s) May 8, 1950 (gage height, 25.19 ft or 7.678 m); minimum daily, 75 ft³/s (2.12 m³/s) July 17, 1910.

REMARKS.--Records good. Diurnal fluctuation caused by St. Croix Falls powerplant 1,800 ft (550 m) upstream. Records of water-quality data for the current year are published in Section 2 of the Wisconsin Report.

REVISIONS (WATER YEARS).--WSP 1115: 1929.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2260	3190	2610	2030	2470	2390	3380	31800	3810	21400	2280	2340
2	2630	4680	2490	2540	2330	2360	3300	30700	3410	22000	2560	2520
3	1950	5540	2220	2340	2560	2560	3130	28600	3520	25500	2270	2090
4	1960	5550	2400	2380	2320	2580	3690	25600	3430	25400	1830	2440
5	2130	5480	2620	1960	2520	1940	3440	22800	3460	23100	1960	2620
6	2090	5050	2970	2380	2330	2990	3050	20300	3630	20500	2170	2570
7	2430	5200	2670	2100	2550	2330	3570	17800	3380	18800	2220	2120
8	2460	4500	2420	2450	2690	2480	3560	15700	3080	17500	2240	2600
9	2570	4600	1860	2540	2230	2210	3440	13700	3300	16100	1870	2860
10	2580	4410	1950	2700	2430	2610	3720	12100	2950	14300	1930	2790
11	2520	4080	1820	2240	2080	1840	3940	11500	2810	12500	2110	2930
12	2410	3860	2400	2390	2580	2370	3960	8100	4150	11000	1830	2100
13	2210	4140	3020	2740	2100	2600	4830	7490	5850	11000	1910	2080
14	2490	3990	2510	2280	2660	2270	6230	7710	6370	7660	1860	2220
15	2400	3720	3140	2530	2100	2490	6830	7180	8340	6160	1860	2540
16	2060	3590	2720	2450	2160	2280	12600	5950	8710	5880	1860	2040
17	2320	3200	2690	2830	2310	2340	15200	5560	9050	5700	1760	2320
18	2460	3680	2440	2700	2090	2400	18500	5290	9260	4910	2010	2500
19	2260	3250	2600	2690	2490	2780	23200	5080	8170	4260	1680	3220
20	2280	3370	2400	2580	2500	2940	27000	4830	8070	3760	1960	2860
21	2590	3420	2420	2400	2400	3090	29500	4830	8080	3480	1910	3000
22	2300	3350	2160	2690	2320	3430	31000	4860	7990	2460	2300	2970
23	2750	3320	2640	2500	2060	3330	31500	4900	9420	3000	3550	3070
24	2130	3150	1990	2580	2380	3140	32300	5100	9820	3100	1890	2750
25	2720	2950	2290	2670	2510	2900	33800	5200	9180	2980	2090	2920
26	1920	2120	2750	2500	2440	3040	33500	5390	8750	2450	2380	2740
27	2270	2460	2270	2520	2430	2880	33200	5120	9800	2570	2350	2690
28	2410	2230	2340	2570	2520	3060	32800	5100	7900	2980	3550	2290
29	2730	3200	2340	2510	---	3100	32000	4970	9710	2420	2760	2800
30	2320	3030	2750	2630	---	3380	31200	4670	19200	2500	2490	2600
31	2890	---	2530	2530	---	3190	---	3940	---	2030	2900	---
TOTAL	73800	114350	76390	76990	66640	83320	476970	341350	205800	307380	69140	77890
MEAN	2381	3812	2464	2484	2380	2688	15900	11010	6860	9915	2230	2596
MAX	2890	5550	3140	2830	2690	3430	33800	31800	19200	25500	3550	3220
MIN	1920	2120	1820	1960	2060	1840	3050	3940	2810	2030	1680	2040
CFSM	.40	.64	.42	.42	.40	.45	2.68	1.86	1.16	1.67	.38	.44
IN.	.46	.72	.48	.48	.42	.52	2.99	2.14	1.29	1.93	.43	.49

CAL YR 1974 TOTAL 1687400 MEAN 4623 MAX 25400 MIN 1820 CFSM .78 IN 10.59
WTR YR 1975 TOTAL 1970100 MEAN 5398 MAX 33800 MIN 1680 CFSM .91 IN 12.36

05344500 Mississippi River at Prescott, Wis.

LOCATION.--Lat 44°44'45", long 92°48'00", in sec.9, T.26 N., R.20 W., Pierce County, on left bank at Prescott, 200 ft (61 m) downstream from St. Croix River, 300 ft (91 m) south of Chicago, Burlington & Quincy Railroad bridge, 800 ft (244 m) south of bridge on U.S. Highway 10, and at mile 811.4 (1,306 km) upstream from Ohio River.

DRAINAGE AREA.--44,800 mi^2 (116,000 km^2), approximately.

PERIOD OF RECORD.--June 1928 to current year.

GAGE.--Water-stage recorder. Datum of gage is 649.50 ft (197.97 m) above mean sea level, datum of 1929. Prior to Aug. 2, 1932, nonrecording gage at railroad bridge 300 ft (91 m) upstream at following datums: June 3, 1928, to Sept. 30, 1929, 19.27 ft (5.873 m) higher; Oct. 1, 1929, to Sept. 30, 1930, 17.68 ft (5.389 m) higher; Oct. 1, 1930, to Aug. 1, 1932, 19.28 ft (5.877 m) higher. Aug. 2, 1932, to Oct. 30, 1938, water-stage recorder at present site at datum 19.28 ft (5.877 m) higher; Nov. 1, 1938, to Sept. 7, 1971, water-stage recorder at present site at datum 50.00 ft (15.240 m) lower. Auxiliary water-stage recorder 10.7 mi (17.2 km) downstream from base gage.

AVERAGE DISCHARGE.--47 years, 16,300 ft^3/s (462 m^3/s), 4.94 in/yr (125 mm/yr).

EXTREMES.--Current year: Maximum discharge, 112,000 ft^3/s (3,170 m^3/s) May 3 (gage height, 36.33 ft or 11.073 m); minimum daily, 4,190 ft^3/s (119 m^3/s) Jan. 13; minimum gage height, 24.54 ft (7.480 m) Nov. 14, Mar. 28.

Period of record: Maximum discharge, 228,000 ft^3/s (6,460 m^3/s) Apr. 18, 1965 (gage height, 43.11 ft or 13.140 m); minimum daily, 1,380 ft^3/s (39.1 m^3/s) July 13, 1940; minimum gage height, 15.08 ft (4.596 m) Aug. 29, 1934, present datum.

REMARKS.--Records good except those for winter period and those for Oct. 1 to Nov. 3, which are fair. Some regulation by reservoirs, navigation dams, and powerplants at low and medium stages. Flood flow not materially affected by artificial storage.

REVISIONS (WATER YEARS).--WSP 1508: 1941. WRD MINN 1974: 1973.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5950	8110	7710	8140	8660	8890	13200	111000	33800	53000	13100	12200
2	5340	8320	7570	8170	8220	8660	13300	111000	32700	58000	14100	12100
3	5690	9690	8690	7290	9070	8650	13700	112000	31900	61300	14900	10800
4	5250	12800	9810	7760	9030	9040	13400	111000	31400	63000	13800	9990
5	5460	13400	10100	8120	8730	9080	13300	109000	31400	64200	12200	9520
6	4970	14400	9780	6760	8450	8040	13500	105000	29900	63700	10000	9980
7	5230	15700	8210	8410	8330	9130	13800	100000	28100	60800	10700	9310
8	5910	15600	7770	8120	8410	8470	14600	94900	27400	58500	11900	9600
9	6280	15100	7920	8260	8620	8480	15400	87600	27100	55900	12000	10800
10	6660	14700	6840	9130	8460	8720	16600	81200	27000	52900	10900	11000
11	6400	13900	5770	8820	8550	9460	17400	76400	27500	50000	10600	11500
12	6290	13300	6980	6920	8070	8160	18100	71300	29600	46000	10700	11700
13	6050	11900	8500	4190	9070	8980	21100	66100	30100	43800	9870	11300
14	5960	10500	9620	6510	8600	9240	24000	61900	30900	41500	9680	11200
15	6800	11000	8140	5900	8440	8480	26200	57600	32500	38700	9630	10800
16	6750	11800	9080	7250	8610	8760	29500	54300	33500	35300	9700	10100
17	7280	11700	8270	7460	8780	8840	33600	52100	35500	33300	9760	10400
18	7320	11800	8530	8760	9160	8820	39700	49300	37600	31600	9960	10100
19	7960	11700	7580	8530	8660	9420	46700	45700	38300	29600	10200	10400
20	7260	10300	8120	8480	9160	9730	55800	44400	38300	28200	11300	10700
21	7330	10900	7970	8130	8660	9700	65500	42400	39100	26100	12400	11300
22	7170	12000	8240	7890	8700	10100	74400	40500	41700	24200	11600	13000
23	6200	12100	7540	8270	8680	11000	83100	37800	44100	23000	14700	11900
24	6680	11900	8370	8690	8440	13800	87500	37600	44700	21000	16200	11300
25	7090	11200	7390	8780	8890	14000	90900	37800	45800	19600	12600	11600
26	7330	11300	5690	9170	9100	12500	93600	38800	46100	18000	11700	12100
27	6850	9840	6460	9100	8690	12000	101000	38400	47100	17300	11700	11900
28	6650	9150	7690	8760	9120	10800	108000	37600	47600	15500	11800	11700
29	7060	8230	9000	8680	---	12600	109000	37400	47200	14400	12500	10900
30	7080	8050	8340	8720	---	12400	110000	36300	48400	14600	12700	9380
31	7580	---	8110	8660	---	12300	---	35300	---	14500	12600	---
TOTAL	201830	350390	249790	247830	243360	308250	1375900	2021700	1086100	1178300	365500	328580
MEAN	6511	11680	8058	7995	8691	9944	45860	65220	36200	38010	11790	10950
MAX	7960	15700	10100	9170	9160	14000	110000	112000	48400	64200	16200	13000
MIN	4970	8050	5690	4190	8070	8040	13200	35300	27000	14400	9630	9310
CFSM	.15	.26	.18	.18	.19	.22	1.02	1.46	.81	.85	.26	.24
IN.	.17	.29	.21	.21	.20	.26	1.14	1.68	.90	.98	.30	.27

CAL YR 1974 TOTAL 6388950 MEAN 17500 MAX 64700 MIN 4400 CFSM .39 IN 5.31
WTR YR 1975 TOTAL 7957530 MEAN 21800 MAX 112000 MIN 4190 CFSM .49 IN 6.61

05345000 Vermillion River near Empire City, Minn.

LOCATION.--Lat 44°40'00", long 93°03'17", on line between sections 23 and 24, T.114 N., R.19 W., Dakota County, on right bank and just downstream from County Road 79, 2 mi (3.2 km) west of Empire City and 4 mi (6.4 km) northeast of Farmington.

DRAINAGE AREA.--110 mi² (285 km²)

PERIOD OF RECORD.--May 1942 to June 1945 (no record during July, August, and September 1944), September 1969 to September 1973 (discharge measurements only), October 1973 to current year.

GAGE.--Water-stage recorder. Datum of gage is 851.99 ft (259.687 m) above mean sea level, datum of 1929 (levels by Corps of Engineers). April 12, 1942, to June 30, 1944, and October 1, 1944, to July 7, 1945, nonrecording gage at same site and datum.

EXTREMES.--Current year: Maximum discharge, 1,390 ft³/s (39.4 m³/s) Apr. 28 (gage height, 6.18 ft or 1.884 m from highwater mark); minimum daily, 8.4 ft³/s (0.24 m³/s) Jan. 15; minimum gage height, 1.65 ft (0.503 m) Jan. 8, 9.

Period of record: Maximum discharge, 2,030 ft³/s (57.5 m³/s) Sept. 18, 1942; maximum gage height observed, 6.40 ft (1.951 m) Mar. 13, 1945 (backwater from ice); minimum daily discharge, 8.4 ft³/s (0.24 m³/s) Jan. 15, 1975; minimum gage height, 1.65 ft (0.503 m) Jan. 8, 9, 1975.

Flood in April 1965 reached a stage of 7.5 ft (2.286 m), from information by local resident (discharge, 6,200 ft³/s or 176 m³/s determined by a logarithmic extension of rating).

REMARKS.--Records good except those for winter periods, which are fair. Records of water-quality data for the current year are published in Section 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	26	20	18	11	18	25	253	82	139	34	53
2	19	23	20	18	11	18	25	207	72	189	89	49
3	19	22	20	18	11	18	24	184	67	140	84	49
4	20	22	20	18	11	18	24	163	67	108	67	46
5	18	22	20	18	11	18	23	144	65	90	51	45
6	20	22	20	18	11	18	24	127	60	83	46	44
7	19	22	20	18	11	18	28	133	56	76	43	42
8	19	22	20	18	11	18	34	190	54	69	41	40
9	19	22	19	19	11	18	33	184	54	66	39	39
10	20	22	19	19	12	18	33	145	56	69	38	39
11	22	23	19	11	12	18	42	121	75	65	37	40
12	21	23	19	9.6	13	18	63	113	259	59	36	39
13	21	23	19	9.3	13	18	99	100	372	56	36	38
14	21	23	19	8.8	14	18	167	93	248	55	35	37
15	21	22	19	8.4	14	18	165	86	191	52	35	37
16	21	22	19	8.6	15	18	153	79	233	47	34	36
17	21	22	19	9.0	16	20	170	75	235	46	36	36
18	21	22	19	9.4	17	23	246	70	191	44	36	36
19	21	23	18	9.5	18	25	224	68	154	42	36	37
20	21	23	18	9.6	18	27	174	68	133	40	37	37
21	23	22	18	9.6	18	30	136	65	124	39	37	36
22	22	22	18	10	18	37	111	61	177	38	37	36
23	22	22	18	10	18	45	158	70	287	38	53	36
24	22	21	18	10	18	40	210	92	199	40	48	35
25	22	21	18	10	18	46	188	89	151	38	44	35
26	22	21	18	10	18	31	156	123	128	37	40	35
27	21	21	18	10	18	52	190	127	120	35	37	35
28	21	20	18	10	18	46	1040	88	116	35	39	35
29	21	20	18	11	---	25	722	95	97	34	77	35
30	21	20	18	11	---	28	370	115	92	33	82	35
31	22	---	18	11	---	25	---	101	---	33	63	---
TOTAL	641	661	584	387.8	405	788	5057	3629	4215	1935	1447	1172
MEAN	20.7	22.0	18.8	12.5	14.5	25.4	169	117	141	62.4	46.7	39.1
MAX	23	26	20	19	18	52	1040	253	372	189	89	53
MIN	18	20	18	8.4	11	18	23	61	54	33	34	35
CFSM	.19	.20	.17	.11	.13	.23	1.54	1.06	1.28	.57	.42	.36
IN.	.22	.22	.20	.13	.14	.27	1.71	1.23	1.43	.65	.49	.40
AC-FT	1270	1310	1160	769	803	1560	10030	7200	8360	3840	2870	2320

CAL YR 1974 TOTAL 14368.0 MEAN 39.4 MAX 212 MIN 17 CFSM .36 IN 4.86 AC-FT 28500
WTR YR 1975 TOTAL 20921.8 MEAN 57.3 MAX 1040 MIN 8.4 CFSM .52 IN 7.08 AC-FT 41500

NOTE.--No gage-height record Apr. 24-29.

05353800 Straight River near Faribault, Minn.

LOCATION.--Lat 44°15'29", long 93°13'51", in W½SE¼ sec.9, T.109 N., R.20 W., Rice County, on right bank 15 ft (5 m) downstream from highway bridge, 2.8 mi (4.5 km) upstream from Falls Creek and 3.2 mi (5.1 km) southeast of Faribault.

DRAINAGE AREA.--442 mi² (1,145 km²).

PERIOD OF RECORD.--October 1965 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,035 ft (315 m) from topographic map .

AVERAGE DISCHARGE.--10 years, 262 cfs (7.42 m³/s), 8.05 in/yr (204 mm/yr)

EXTREMES.--Current year: Maximum discharge, 3,450 ft³/s (97.7 m³/s) Apr. 28 (gage height, 9.34 ft or 2.847 m); minimum, 14 ft³/s (0.40 m³/s) Nov. 26 (gage height, 3.66 ft or 1.116 m).
Period of record: Maximum discharge, 5,990 ft³/s (170 m³/s) May 1, 1973 (gage height, 11.20 ft or 3.414 m); maximum gage height, 12.74 ft (3.883 m) Mar. 5, 1974 (backwater from ice); minimum daily discharge, 11 ft³/s (0.31 m³/s) Feb. 18 to Mar. 1, 1968.

REMARKS.--Records good except for winter periods, which are fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	47	37	40	34	30	400	1720	469	510	47	34
2	37	61	36	40	34	30	390	1390	391	428	65	34
3	36	61	38	40	33	31	385	1810	344	366	50	33
4	37	53	37	40	33	31	388	1780	354	317	48	32
5	38	51	35	40	33	31	411	1420	378	280	46	32
6	40	49	35	40	32	31	512	1070	366	265	44	32
7	39	48	33	40	32	31	961	811	308	244	43	30
8	41	46	31	40	32	31	1210	695	269	214	48	29
9	42	45	32	40	31	32	1090	641	253	189	38	30
10	40	50	33	40	31	32	893	578	263	173	44	30
11	59	49	34	40	31	32	1090	530	381	161	38	46
12	52	49	35	39	31	32	1380	585	1200	149	38	35
13	53	47	36	39	31	32	1860	582	1200	130	38	34
14	51	45	36	38	30	32	2330	513	1010	135	38	31
15	44	44	37	38	30	33	2180	451	1540	126	36	29
16	45	44	38	38	30	33	1930	397	1640	121	36	31
17	44	43	38	37	29	34	1800	363	1830	112	35	30
18	43	43	38	37	29	35	1600	336	1700	107	34	31
19	42	45	39	37	29	37	1510	324	1800	102	36	31
20	41	44	39	37	29	42	1340	314	1530	94	36	33
21	40	42	39	37	29	50	1140	279	1300	92	36	30
22	41	40	39	37	29	70	961	266	1160	89	39	29
23	40	42	40	36	30	130	1280	309	966	89	40	29
24	40	41	40	36	30	230	1330	388	737	92	39	29
25	40	37	40	36	30	430	1200	313	607	80	36	28
26	40	35	40	36	30	470	1020	378	530	75	34	28
27	39	35	40	35	30	470	1170	485	960	67	33	28
28	40	38	40	35	30	450	3060	430	1110	63	35	28
29	44	38	40	35	---	440	3030	424	724	59	37	28
30	44	37	40	34	---	430	2290	551	552	52	36	28
31	39	---	40	34	---	410	---	568	---	50	35	---
TOTAL	1309	1349	1155	1171	862	4232	40141	20701	25872	5039	1238	932
MEAN	42.2	45.0	37.3	37.8	30.8	137	1338	668	862	163	39.9	31.1
MAX	59	61	40	40	34	470	3060	1810	1830	510	65	46
MIN	36	35	31	34	29	30	385	266	253	50	33	28
CFSM	.10	.10	.08	.09	.07	.31	3.03	1.51	1.95	.37	.09	.07
IN.	.11	.11	.10	.10	.07	.36	3.38	1.74	2.18	.42	.10	.08

CAL YR 1974 TOTAL 93826 MEAN 257 MAX 2180 MIN 31 CFSM .58 IN 7.90
WTR YR 1975 TOTAL 104001 MEAN 285 MAX 3060 MIN 28 CFSM .64 IN 8.75

PEAK DISCHARGE (BASE, 1,500 FT³/S)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
4-14	2230	8.16	2,360	5-3	1515	7.51	1,890
4-28	1400	9.34	3,450	6-17	1745	7.86	2,210

05373000 South Fork Zumbro River near Rochester, Minn.

LOCATION.--Lat 44°04'00", long 92°27'55", in SE¼ sec.14, T.107 N., R.14 W., Olmsted County, on left bank 30 ft (9.1 m) upstream from ford, 0.2 mi (0.3 km) downstream from sewage plant, 1.6 mi (2.6 km) north of Rochester, 2 mi (3 km) downstream from Cascade Creek, and 2.5 mi (4.0 km) downstream from Silver Lake Dam.

DRAINAGE AREA.--304 mi² (787 km²).

PERIOD OF RECORD.--January 1952 to current year.

GAGE.--Water-stage recorder. Datum of gage is 949.56 ft (289.426 m) above mean sea level, datum of 1929.

AVERAGE DISCHARGE.--23 years, 152 ft³/s (4.30 m³/s), 6.79 in/yr (172 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,630 ft³/s (74.5 m³/s) Apr. 28 (gage height, 9.11 ft or 2.777 m); minimum, 47 ft³/s (1.33 m³/s) Sept. 28; minimum gage height, 2.91 ft (0.887 m) Sept. 14, 15.

Period of record: Maximum discharge, 19,600 ft³/s (555 m³/s) Mar. 1, 1965 (gage height, 19.12 ft or 5.828 m, from floodmark); minimum, 8.4 ft³/s (0.24 m³/s) Dec. 7, 1955.

Flood of July 21, 1951, reached a stage of about 17.5 ft (5.33 m), from information by sewage plant superintendent. This is the highest known stage outside the period of record since at least 1908.

REMARKS.--Records good. Slight regulation at times from Silver Lake and at very low flows from sewage-plant effluent.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	86	108	84	66	62	66	190	529	210	646	78	77
2	87	98	81	65	61	66	197	492	192	317	130	76
3	86	91	85	68	62	68	167	647	180	263	96	72
4	80	91	84	64	64	70	177	677	245	226	84	69
5	80	89	80	65	64	73	208	470	259	205	85	68
6	84	88	83	67	60	72	274	391	186	214	88	66
7	82	87	83	67	61	72	672	395	163	194	85	65
8	81	87	76	68	59	69	998	415	151	177	83	64
9	81	89	77	67	56	68	646	493	152	182	82	77
10	81	97	79	106	57	74	416	396	151	178	80	63
11	90	98	79	81	59	73	536	382	200	167	83	61
12	84	95	78	68	59	75	919	417	393	157	83	57
13	102	93	79	69	60	74	763	373	340	149	82	55
14	98	91	77	69	60	75	763	312	239	151	79	54
15	96	86	81	70	61	75	625	279	237	146	78	54
16	92	90	81	71	61	80	606	258	255	122	78	54
17	90	88	75	70	64	94	585	241	453	92	76	53
18	89	91	75	71	66	102	606	221	801	94	79	53
19	83	93	78	68	65	118	813	215	880	94	75	53
20	82	93	75	68	66	157	565	205	471	89	75	53
21	82	91	74	68	67	354	433	193	347	89	76	53
22	82	91	73	67	67	471	393	209	456	84	95	58
23	82	90	73	66	66	746	678	204	332	85	86	62
24	82	90	70	66	69	710	677	258	284	88	116	60
25	80	87	68	67	70	629	490	203	259	86	196	56
26	79	85	70	64	67	418	440	598	245	83	106	53
27	79	88	71	65	66	319	659	328	272	78	90	52
28	84	82	71	64	69	242	2030	257	246	80	86	51
29	113	86	70	65	---	247	1220	294	321	78	112	54
30	94	86	68	62	---	206	707	305	741	79	88	55
31	101	---	70	62	---	232	---	251	---	79	80	---
TOTAL	2692	2719	2368	2124	1766	6195	18453	10908	9661	4772	2806	1798
MEAN	86.8	90.6	76.4	68.5	63.1	200	615	352	322	154	90.5	59.9
MAX	113	108	85	106	70	746	2030	677	880	646	196	77
MIN	79	82	68	62	56	66	167	193	151	78	75	51
CFSM	.29	.30	.25	.23	.21	.66	2.02	1.16	1.06	.51	.30	.20
IN.	.33	.33	.29	.26	.22	.76	2.26	1.33	1.18	.58	.34	.22

CAL YR 1974 TOTAL 111428 MEAN 305 MAX 7910 MIN 68 CFSM 1.00 IN 13.64
WTR YR 1975 TOTAL 66262 MEAN 182 MAX 2030 MIN 51 CFSM .60 IN 8.11

PEAK DISCHARGE (BASE, 1,300 FT³/S).--Apr. 28 (1415) 2,630 ft³/s (9.11 ft).

05374000 Zumbro River at Zumbro Falls, Minn.

LOCATION.--Lat 44°17'12", long 92°25'56", in sec.36, T.110 N., R.14 W., Wabasha County, on left bank in Zumbro Falls, 1,000 ft (305 m) downstream from Cold Creek, 0.7 mi (1.1 km) upstream from bridge on U.S. Highway 63, and 6.3 mi (10.1 km) downstream from North Fork.

DRAINAGE AREA.--1,130 mi² (2,930 km²), approximately.

PERIOD OF RECORD.--June 1909 to September 1917, April to November 1929, March 1930 to current year. Monthly discharge only for some periods, published in WSP 1308.

GAGE.--Water-stage recorder. Datum of gage is 811.26 ft (247.27 m) above mean sea level, datum of 1929. Prior to Nov. 11, 1933, nonrecording gage on bridge 800 ft (244 m) downstream at same datum.

AVERAGE DISCHARGE.--53 years (1909-17, 1930-75), 518 ft^3/s (14.67 m^3/s), 6.23 in/yr (158 mm/yr).

EXTREMES.--Current year: Maximum discharge, 8,220 ft^3/s (233 m^3/s) Apr. 29 (gage height, 15.87 ft or 4.837 m); minimum, 51 ft^3/s (1.44 m^3/s) Jan. 11 (gage height, 6.11 ft or 1.862 m).

Period of record: Maximum discharge, 35,900 ft^3/s (1,020 m^3/s) July 22, 1951 (gage height, 30.80 ft or 9.388 m, from floodmark); minimum, 27 ft^3/s (0.76 m^3/s) Jan. 12, 1935; minimum gage height, 5.96 ft (1.817 m) Nov. 27, 1967.

Flood of April 1888 reached stage of about 30.5 ft (9.30 m) at present site or 29.7 ft (9.05 m) original site. Flood in 1859 is known to have exceeded that of 1888 (gage height, not determined).

REMARKS.--Records good. Diurnal fluctuation caused by powerplant above station. Records of water-quality data for the current year are published in Section 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	344	365	273	309	301	201	810	2300	957	1660	448	377
2	332	448	329	206	223	223	814	1830	911	1210	253	378
3	289	429	336	336	305	500	802	2250	898	1020	360	365
4	381	321	336	317	281	761	796	3080	986	929	484	367
5	360	398	332	293	313	753	796	2250	1830	899	323	363
6	332	398	344	269	236	747	796	1760	1200	869	247	278
7	340	293	329	313	261	485	808	1540	995	894	354	246
8	332	250	309	293	219	223	833	1530	950	634	363	279
9	329	158	301	452	181	325	871	1630	926	511	227	234
10	329	156	236	480	193	236	1080	1600	611	860	455	231
11	416	462	247	184	124	270	1280	1390	779	726	409	286
12	647	407	247	297	344	250	1970	1360	1960	288	306	332
13	608	281	258	236	332	336	2630	1330	2580	400	239	274
14	608	301	301	309	270	289	3070	1200	1770	728	357	278
15	344	369	344	377	167	137	3220	1080	1880	488	321	248
16	344	332	340	360	344	369	2830	1010	2890	486	214	250
17	329	305	356	317	313	297	2630	949	2850	425	274	321
18	377	462	309	167	203	348	2540	878	3280	398	336	294
19	340	466	365	381	277	340	2650	900	3790	419	379	329
20	352	381	394	254	273	305	2460	898	3310	396	325	284
21	336	394	407	352	187	717	1860	676	2160	522	336	339
22	344	485	266	219	352	802	1600	548	1840	417	360	208
23	332	301	240	206	270	865	1930	722	1560	399	221	288
24	340	178	247	365	223	859	2730	817	1130	440	443	358
25	216	394	281	329	219	852	2130	842	1090	437	339	407
26	313	511	365	247	301	846	1670	968	1080	236	383	781
27	309	365	273	337	297	859	1940	1530	1220	419	800	794
28	236	289	281	313	289	852	4910	1210	1280	428	584	788
29	240	373	273	236	---	840	6990	930	1220	317	583	703
30	305	352	348	184	---	827	3450	906	1630	411	222	190
31	377	---	352	199	---	833	---	960	---	400	186	---
TOTAL	11261	10624	9619	9097	7278	16607	62900	40914	49563	18666	11131	10866
MEAN	363	354	310	293	260	536	2097	1320	1652	602	359	362
MAX	647	511	407	480	352	865	6990	3080	3790	1660	800	794
MIN	216	156	236	167	124	137	796	548	611	236	186	190
CFSM	.32	.31	.27	.26	.23	.47	1.86	1.17	1.46	.53	.32	.32
IN.	.37	.35	.32	.30	.24	.55	2.07	1.35	1.63	.61	.37	.36

CAL YR 1974 TOTAL 327293 MEAN 897 MAX 8380 MIN 156 CFSM .79 IN 10.77
WTR YR 1975 TOTAL 258506 MEAN 708 MAX 6990 MIN 124 CFSM .63 IN 8.51

05376000 North Fork Whitewater River near Elba, Minn.

(Hydrologic bench-mark station)

LOCATION.--Lat 44°05'30", long 92°03'57", in sec.7, T.107 N., R.10 W., Winona County, on left bank 2.3 mi (3.7 km) upstream from Middle Fork, 2.4 mi (3.9 km) west of Elba, and 3.5 mi (5.6 km) upstream from confluence with South Fork.

DRAINAGE AREA.--101 mi² (262 km²).

PERIOD OF RECORD.--May 1939 to September 1941, July 1967 to current year.

GAGE.--Water-stage recorder. Datum of gage is 769.60 ft (234.574 m) above mean sea level, datum of 1929. Oct. 12, 1939, to Sept. 30, 1941, water-stage recorder at site 600 ft (183 km) downstream at same datum. Prior to Oct. 12, 1939, nonrecording gage at site 2 mi (3.2 km) downstream at different datum.

AVERAGE DISCHARGE.--10 years (1939-41, 1967-75), 43.7 ft³/s (1.238 m³/s), 5.88 in/yr (149 mm/yr).

EXTREMES.--Current year: Maximum discharge, 11,500 ft³/s (326 m³s) July 5 (gage height, 15.01 ft or 4.575 m, from highwater mark); minimum, 26 ft³/s (0.74 m³/s) Mar. 9, 13, 14; minimum gage height, 2.65 ft (0.808 m) Sept. 14, 15, 24, 25, 26, 28.

Period of record: Maximum discharge, 16,100 ft³/s (456 m³/s) June 21, 1974 (gage height, 16.32 ft or 4.974 m, from highwater mark); minimum, 11 ft³/s (0.31 m³/s) Feb. 21, 1968.

Flood of June 15, 1967 reached a stage of 8.56 ft (2.61 m) from highwater mark (discharge, 2,350 ft³/s or 66.6 m³/s).

REMARKS.--Records good. Records of water-quality data for the current year are published in Section 2 of this report.

REVISIONS (WATER YEARS).--WRD Minn. 1974: 1967(M), 1969(M), 1971(M), 1972(M), 1973(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	46	38	34	33	31	38	90	43	75	40	42
2	43	43	38	36	33	31	38	81	41	63	43	42
3	43	43	38	37	33	30	37	88	41	58	45	40
4	43	41	38	36	36	31	37	81	67	54	42	39
5	44	41	38	36	36	33	37	71	158	2350	42	39
6	44	40	38	37	33	33	40	65	59	489	42	39
7	43	40	38	37	36	31	101	65	47	133	42	39
8	43	40	37	37	33	31	150	75	44	96	40	37
9	43	40	37	37	30	31	92	65	43	94	39	37
10	43	43	38	38	31	31	61	61	43	110	39	39
11	43	43	38	40	32	31	126	59	49	75	39	39
12	43	41	38	36	33	33	173	58	108	69	39	37
13	44	41	38	36	33	31	133	58	67	66	37	36
14	46	40	38	36	34	31	142	54	54	62	36	36
15	46	40	41	37	34	31	116	53	54	60	36	36
16	43	40	40	36	35	31	106	53	53	57	40	37
17	43	40	38	36	35	31	108	51	71	55	40	37
18	41	40	37	37	34	34	111	49	131	55	39	37
19	41	40	37	36	33	37	123	49	147	50	39	37
20	41	40	36	36	33	44	92	47	73	48	39	37
21	41	38	37	37	33	77	77	46	65	45	42	39
22	41	38	37	34	33	111	73	46	260	47	48	37
23	41	40	37	36	31	182	106	54	81	47	47	37
24	40	40	36	37	33	118	94	65	65	45	45	36
25	40	40	34	37	34	92	77	49	59	43	51	34
26	40	38	36	36	33	59	69	46	58	42	51	36
27	40	40	36	34	31	53	99	44	176	43	42	36
28	40	38	36	34	31	44	326	44	71	42	64	36
29	43	38	36	36	---	43	155	47	364	42	99	36
30	44	38	34	34	---	41	108	47	195	40	55	37
31	44	---	36	33	---	40	---	46	---	40	45	---
TOTAL	1315	1210	1154	1117	929	1507	3045	1807	2787	4595	1387	1126
MEAN	42.4	40.3	37.2	36.0	33.2	48.6	102	58.3	92.9	148	44.7	37.5
MAX	46	46	41	40	36	182	326	90	364	2350	99	42
MIN	40	38	34	33	30	30	37	44	41	40	36	34
CFSM	.42	.40	.37	.36	.33	.48	1.01	.58	.92	1.47	.44	.37
IN.	.48	.45	.43	.41	.34	.56	1.12	.67	1.03	1.69	.51	.41

CAL YR 1974 TOTAL 33305 MEAN 91.2 MAX 6640 MIN 30 CFSM .90 IN 12.27
WTR YR 1975 TOTAL 21979 MEAN 60.2 MAX 2350 MIN 30 CFSM .60 IN 8.10

05378300 Straight Valley Creek near Rollingstone, Minn.

LOCATION.--Lat 44°05'09", long 91°50'34", in SE¼NE¼ sec.12, T.107 N., R.9 W., Winona County, at bridge on County Highway, 0.2 mi (0.3 km) above mouth, and 1.5 mi (2.4 km) southwest of Rollingstone.

DRAINAGE AREA.--5.16 mi² (13.36 km²).

PERIOD OF RECORD.--Annual maximums, water years 1959-70. October 1970 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Nov. 6, 1958, to Oct. 20, 1966, crest-stage gage at present site and datum.

AVERAGE DISCHARGE.--5 years (1970-75), 2.32 ft³/s (0.066 m³/s), 6.11 in/yr (155 mm/yr).

EXTREMES.--Current year: Maximum discharge, 188 ft³/s (5.32 m³/s) June 4 (gage height, 12.76 ft or 3.889 m); minimum, 1.3 ft³/s (0.037 m³/s) July 17 (gage height, 9.75 ft or 2.972 m); minimum gage height, 9.73 ft (2.966 m) Sept. 7, 8.

Period of record: Maximum discharge, 1,200 ft³/s (34.0 m³/s) June 26, 1959 (gage height, 17.28 ft or 5.267 m); maximum gage height, 14.72 ft (4.487 m) Mar. 28, 1974 (backwater from fallen tree); minimum discharge observed, 0.12 ft³/s (0.003 m³/s) Aug. 5, 1960.

REMARKS.--Records good.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	2.0	1.9	1.6	1.8	1.7	2.1	3.4	2.8	1.7	1.6	1.7
2	1.6	1.9	1.8	1.6	1.8	1.7	2.0	3.4	2.9	1.6	1.8	1.7
3	1.6	1.9	1.8	1.6	1.8	1.7	2.0	3.2	2.9	1.6	1.7	1.6
4	1.6	1.9	1.8	1.6	1.8	1.7	2.0	3.0	13	1.5	1.7	1.6
5	1.8	1.9	1.8	1.6	1.8	1.6	2.0	3.0	3.0	1.5	1.6	1.6
6	2.0	1.9	1.8	1.6	1.8	1.6	2.0	2.7	2.5	1.6	1.6	1.6
7	1.8	1.7	1.9	1.7	1.8	1.7	2.1	3.0	2.1	1.5	1.5	1.6
8	1.8	1.7	1.8	1.7	1.7	1.5	2.2	2.9	2.1	1.5	1.4	1.5
9	1.8	1.7	1.7	1.8	1.6	1.5	2.3	2.7	2.1	2.1	1.4	1.6
10	1.8	2.0	1.6	1.9	1.6	1.6	2.5	2.7	2.2	2.0	1.4	2.0
11	1.9	1.9	1.7	1.8	1.6	1.6	2.6	2.8	2.5	1.8	1.5	1.6
12	1.8	1.7	1.7	1.7	1.5	1.6	2.6	2.8	2.6	1.7	1.5	1.6
13	2.0	1.8	1.7	1.6	1.5	1.5	2.7	2.8	2.6	1.7	1.5	1.7
14	2.0	1.7	1.7	1.5	1.5	1.5	2.6	2.9	2.6	1.7	1.5	1.7
15	1.8	1.7	1.9	1.6	1.6	1.5	2.5	2.9	3.3	1.7	1.6	1.6
16	1.9	1.7	1.9	1.7	1.6	1.6	2.5	2.6	2.7	1.6	1.5	1.7
17	1.9	1.7	1.8	1.7	1.6	1.9	2.7	2.5	4.0	1.6	1.5	1.7
18	1.9	1.7	1.8	1.7	1.6	2.1	3.2	2.3	6.2	1.6	1.5	1.7
19	1.7	1.8	1.8	1.7	1.6	2.5	3.1	2.3	2.6	1.5	1.5	1.6
20	1.7	1.8	1.8	1.7	1.6	2.9	2.7	2.1	2.1	1.4	1.5	1.8
21	1.7	1.7	1.8	1.7	1.6	3.8	2.7	1.9	2.1	1.4	1.8	1.6
22	1.7	1.7	1.8	1.7	1.6	4.2	2.8	1.9	2.0	1.4	1.9	1.6
23	1.7	1.7	1.8	1.7	1.5	3.8	3.2	2.5	1.9	1.5	1.9	1.6
24	1.7	1.7	1.7	1.7	1.6	4.2	3.0	2.3	1.9	1.6	1.9	1.6
25	1.6	1.8	1.7	1.8	1.5	3.1	3.0	2.3	1.9	1.5	1.9	1.6
26	1.7	1.8	1.7	1.8	1.6	2.9	2.9	2.3	2.1	1.6	1.7	1.8
27	1.7	1.8	1.7	1.8	1.6	2.8	8.1	2.5	2.1	1.6	1.7	1.7
28	1.8	1.8	1.8	1.8	1.6	2.7	13	2.8	1.7	1.5	5.1	1.7
29	1.9	1.8	1.9	1.8	---	2.5	4.4	3.2	1.7	1.6	2.7	1.6
30	2.1	1.8	1.8	1.9	---	2.3	3.8	2.9	1.7	1.7	1.9	1.6
31	2.0	---	1.7	1.9	---	2.1	---	2.8	---	1.6	1.9	---
TOTAL	55.6	53.7	55.1	53.0	45.8	69.8	95.5	83.4	85.9	49.9	55.2	51.4
MEAN	1.79	1.79	1.78	1.71	1.64	2.25	3.18	2.69	2.86	1.61	1.78	1.71
MAX	2.1	2.0	1.9	1.9	1.8	4.2	13	3.4	13	2.1	5.1	2.0
MIN	1.6	1.7	1.6	1.5	1.5	1.5	2.0	1.9	1.7	1.4	1.4	1.5
CFSM	.35	.35	.35	.33	.32	.44	.62	.52	.55	.31	.35	.33
IN.	.40	.39	.40	.38	.33	.50	.69	.60	.62	.36	.40	.37

CAL YR 1974 TOTAL 1076.9 MEAN 2.95 MAX 62 MIN 1.6 CFSM .57 IN 7.76
WTR YR 1975 TOTAL 756.3 MEAN 2.07 MAX 13 MIN 1.4 CFSM .40 IN 5.44

05378500 Mississippi River at Winona, Minn.

LOCATION.--Lat 44°03'20", long 91°38'15", in sec.23, T.107 N., R.7 W., Winona County, on right bank at Winona pumping station in Winona, 9.5 mi (15.3 km) upstream from Trempealeau River and at mile 725.7 (1,167.7 km) upstream from the Ohio River.

DRAINAGE AREA.--59,200 mi^2 (153,300 km^2), approximately.

PERIOD OF RECORD.--June 1928 to current year. Gage-height records collected in this vicinity since 1878 are contained in reports of Mississippi River Commission

GAGE.--Water-stage recorder. Datum of gage is 639.64 ft (194.962 m) above mean sea level, datum of 1929. June 10, 1928, to Apr. 15, 1931, nonrecording gage at site 800 ft (244) upstream. Prior to Oct. 1, 1929, at datum 0.20 ft (0.06 m) higher and Oct. 1, 1929, to Apr. 15, 1931, at datum 0.12 ft (0.04 m) lower. Apr. 16, 1931, to Nov. 12, 1934, nonrecording gage at present site and datum. Since Mar. 31, 1937, auxiliary water-stage recorder 2.7 mi (4.3 km) upstream at tailwater of navigation dam 5A.

AVERAGE DISCHARGE.--47 years, 26,290 ft^3/s (744.5 m^3/s), 6.03 in/yr (153 mm/yr).

EXTREMES.--Current year: Maximum discharge, 166,000 ft^3/s (4,700 m^3/s) May 2 (gage height, 16.61 ft or 5.063 m); minimum daily, 9,100 ft^3/s (258 m^3/s) Dec. 11; minimum gage height, 4.80 ft (1.463 m) Sept. 6.

Period of record: Maximum discharge, 268,000 ft^3/s (7,590 m^3/s) Apr. 19, 1965 (gage height, 20.77 ft or 6.331 m, from floodmark); minimum, 2,250 ft^3/s (63.7 m^3/s) Dec. 29, 1933 (gage height, -1.18 ft or -0.360 m); minimum gage height, -3.38 ft (-1.030 m) Aug. 31, 1934.

Flood of June 18, 1880, reached an elevation of 657.14 ft (200.296 m), according to Corps of Engineers (discharge not determined).

REMARKS.--Records good. Records of water-quality data for the current year are published in Section 2 of this report. Some regulation by reservoirs, navigation dams, and powerplants at low and medium stages. Flood flow not materially affected by artificial storage.

REVISIONS.--WSP 700: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11400	20500	17400	14700	15400	17800	27200	165000	50100	66400	23300	26900
2	10800	20900	16500	14500	15000	17800	25700	165000	48500	66700	24000	29000
3	11700	20300	14400	14300	15200	17500	24500	162000	47900	66500	25100	25200
4	12400	21200	14200	13700	15300	17400	24900	157000	46600	66100	24400	22800
5	11100	21900	13800	13400	15300	17700	25300	152000	46800	66800	23100	21600
6	13700	23900	14200	13200	15600	18500	25600	147000	46400	70500	21800	20500
7	16600	25000	16100	13700	15600	18700	24800	142000	45300	73600	18600	20000
8	15600	25700	16300	14100	15500	17800	24700	138000	40500	72200	17700	18700
9	15700	25200	15700	14400	15200	17400	24400	133000	38000	70400	17600	19200
10	16100	24600	11300	14400	15000	17300	25200	127000	36700	68900	19200	18200
11	15700	25000	9100	14700	15000	16800	27100	119000	34300	67200	19000	19100
12	15300	25200	10900	14700	15000	16700	31300	110000	36400	64600	19100	25500
13	14600	24100	13600	14300	14900	16900	32500	103000	40500	61600	17800	26900
14	14200	22500	18000	13600	14900	17100	34700	94100	43500	58700	17300	30300
15	14400	22400	21000	13400	15000	16900	40200	86000	45300	56100	16900	30000
16	15100	22900	21700	13400	15100	17100	44400	79400	45300	53600	17700	24700
17	15800	23200	19700	13200	16100	19500	46400	73000	46900	49600	17200	22700
18	16300	23000	16300	13200	17000	19600	50100	69300	51400	47700	16300	21700
19	15900	22500	15400	13200	16700	19300	52700	66700	54800	46000	16100	21700
20	16000	21600	15400	13300	16700	18900	56900	62800	55000	41600	17100	21600
21	14800	21700	15500	13500	16700	21200	61000	61200	55600	40300	19000	21900
22	13600	21400	15600	14200	17300	25200	69100	60000	57600	35200	22700	21800
23	13900	21000	15600	14500	17700	25800	80900	58400	58800	33700	28500	21800
24	13900	22100	15600	15300	18400	26600	92300	55500	59400	28600	43100	21900
25	13600	22300	15300	16300	18500	30900	107000	54200	62100	26500	36200	21800
26	13600	22500	13300	16600	18300	30000	116000	53000	63800	29500	30000	22000
27	14500	21600	13000	16600	18300	27900	126000	52400	64500	27600	27500	21900
28	14900	21800	13400	16500	17900	24000	143000	52300	65100	26500	25700	21900
29	15100	20300	14000	16500	---	24000	154000	53400	65500	22700	27100	21700
30	17800	18100	15200	16400	---	24000	160000	53200	65700	20400	26200	19700
31	18900	---	14900	16200	---	26800	---	51900	---	21600	26500	---
TOTAL	453000	674400	472400	450000	452600	643100	1777900	2956800	1518300	1548400	701800	682700
MEAN	14610	22480	15240	14520	16160	20750	59260	95380	50610	49950	22640	22760
MAX	18900	25700	21700	16600	18500	30900	160000	165000	65700	73600	43100	30300
MIN	10800	18100	9100	13200	14900	16700	24400	51900	34300	20400	16100	18200
CFSM	.25	.38	.26	.25	.27	.35	1.00	1.61	.85	.84	.38	.38
IN.	.28	.42	.30	.28	.28	.40	1.12	1.86	.95	.97	.44	.43

CAL YR 1974 TOTAL 10584800 MEAN 29000 MAX 81300 MIN 9100 CFSM .49 IN 6.65
WTR YR 1975 TOTAL 12331400 MEAN 33780 MAX 165000 MIN 9100 CFSM .57 IN 7.75

05384000 Root River near Lanesboro, Minn.

LOCATION.--Lat 43°44'58", long 91°58'43", in sec.1, T.103 N., R.10 W., Fillmore County, on left Bank 0.5 mi (0.8 km) upstream from highway bridge, 1.2 mi (1.9 km) upstream from South Branch, and 2.5 mi (4.0 km) northeast of Lanesboro.

DRAINAGE AREA.--615 mi² (1,593 km²).

PERIOD OF RECORD.--February to November 1910, February 1911 to September 1914, July 1915 to September 1917. August 1940 to current year. Published as North Branch Root River near Lanesboro, 1910-17.

GAGE.--Water-stage recorder. Datum of gage is 791.32 ft (241.194 m) above mean sea level, datum of 1929. Prior to Oct. 1, 1917, nonrecording gage at site 0.5 mi (0.8 km) downstream at datum about 1.5 ft (0.5 m) higher.

AVERAGE DISCHARGE.--40 years (1911-14, 1915-17, 1940-75), 337 ft³/s (9.54 m³/s), 7.44 in/yr (189 mm/yr).

EXTREMES.--Current year: Maximum discharge, 7,340 ft³/s (208 m³/s) Apr. 29 (10.59 ft or 3.228 m); minimum, 72 ft³/s (2.04 m³/s) Jan. 11 (gage height, 0.69 ft or 0.210 m).

Period of record: Maximum discharge, 22,100 ft³/s (626 m³/s) Mar. 29, 1962 (gage height, 16.11 ft or 4.910 m); maximum gage height, 17.83 ft (5.435 m) Mar. 1, 1965 (from floodmark, backwater from ice); minimum discharge, 29 ft³/s (0.821 m³/s) Aug. 27, 1949 (gage height, 1.08 ft or 0.329 m); minimum gage height, 0.69 ft (0.210 m) Jan. 11, 1975.

REMARKS.--Records good except those for winter periods, which are fair. Diurnal fluctuation at times during medium and low flow caused by powerplant above station.

REVISIONS (WATER YEARS).--WSP 355: 1912. WSP 1308: 1911(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	211	259	176	189	183	169	388	1350	410	576	221	230
2	209	256	171	189	182	169	361	1040	369	556	222	218
3	208	237	176	189	181	168	339	912	350	466	243	210
4	210	226	178	189	179	168	343	899	345	423	236	199
5	213	219	180	195	179	168	348	959	478	501	223	197
6	217	214	178	197	179	168	398	777	340	684	219	193
7	217	211	178	197	179	168	720	670	329	396	215	189
8	214	209	163	199	179	168	1660	635	309	364	210	183
9	213	208	125	194	178	169	1550	594	301	352	205	180
10	210	217	150	198	178	169	965	841	300	364	201	180
11	215	223	175	148	178	170	729	707	309	336	197	180
12	231	218	185	123	177	171	1100	679	387	322	198	175
13	226	216	182	170	177	172	1490	1090	384	312	199	173
14	237	211	180	198	176	173	1450	838	381	303	196	171
15	231	206	182	202	175	173	1360	647	370	295	193	171
16	225	201	180	200	173	173	1170	557	352	285	191	171
17	220	205	176	196	171	174	1190	507	358	275	193	173
18	214	205	176	192	171	177	1180	472	493	267	189	173
19	210	208	180	192	168	185	1340	453	947	260	186	174
20	209	204	181	191	165	216	1380	435	1080	253	190	174
21	208	200	176	190	164	410	948	398	695	248	222	173
22	207	199	180	189	162	644	761	424	734	246	266	172
23	207	200	184	189	160	956	798	419	736	245	236	171
24	207	198	189	189	159	1070	1240	441	565	247	246	171
25	206	195	189	189	159	1110	1080	403	494	242	1020	171
26	204	180	189	188	162	973	854	386	466	238	447	169
27	205	176	195	188	166	821	849	354	1160	235	306	169
28	206	173	189	187	168	578	2530	341	688	232	262	173
29	214	178	189	186	---	505	5000	379	537	230	294	176
30	221	180	195	186	---	413	2110	444	1040	226	274	176
31	238	---	189	185	---	422	---	480	---	220	247	---
TOTAL	6663	6232	5536	5814	4828	11370	35631	19531	15707	10199	7947	5435
MEAN	215	208	179	188	172	367	1188	630	524	329	256	181
MAX	238	259	195	202	183	1110	5000	1350	1160	684	1020	230
MIN	204	173	125	123	159	168	339	341	300	220	186	169
CFSM	.35	.34	.29	.31	.28	.60	1.93	1.02	.85	.54	.42	.29
IN.	.40	.38	.33	.35	.29	.69	2.16	1.18	.95	.62	.48	.33

CAL YR 1974 TOTAL 207686 MEAN 569 MAX 11800 MIN 125 CFSM .93 IN 12.56
WTR YR 1975 TOTAL 134893 MEAN 370 MAX 5000 MIN 123 CFSM .60 IN 8.16

PEAK DISCHARGE (BASE, 3,500 FT³/S).--Apr. 29 (0815) 7,340 ft³/s (10.59 ft).

05384500 Rush Creek near Rushford, Minn.

LOCATION.--Lat 43°50'00", long 91°46'40", on line between secs. 3 and 10, T.104 N., R.8 W., Fillmore County, on downstream side near center of span of highway bridge, 1.5 mi (2.4 km) northwest of Rushford and 3 mi (5 km) upstream from mouth.

DRAINAGE AREA.--129 mi² (334 km²).

PERIOD OF RECORD.--August 1942 to current year.

GAGE.--Nonrecording gage read twice daily and crest-stage gage. Datum of gage is 734.56 ft (223.894 m) above mean sea level, datum of 1929. Prior to June 14, 1950, water-stage recorder at site 100 ft (30 m) upstream; at datum 5 ft (1.52 m) higher, Aug. 5, 1942, to Oct. 27, 1945; at datum 3 ft (0.91 m) higher, Oct. 28, 1945, to Aug. 3, 1949; at present datum, Aug. 4, 1949, to June 13, 1950.

AVERAGE DISCHARGE.--33 years, 54.5 ft³/s (1.543 m³/s), 5.74 in/yr (146 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,220 ft³/s (34.6 m³/s) July 5 (gage height, 4.85 ft or 1.478 m); minimum, 52 ft³/s (1.47 m³/s) Jan. 2 (gage height, 1.18 ft or 0.36 m).

Period of record: Maximum discharge, 11,600 ft³/s (329 m³/s) Mar. 26, 1950 (gage height 13.54 ft or 4.127 m, from floodmark); from rating curve extended above 1,400 ft³/s (39.6 m³/s) on basis of contracted-opening measurements at gage heights 11.0 ft (3.4 m) and 13.5 ft (4.1 m); minimum, 17 ft³/s (0.48 m³/s) May 22, 1959; minimum gage height, 0.93 ft (0.283 m) June 16, 17, 18, 1965.

Flood of June 28, 29, 1942, reached a discharge of 11,000 ft³/s (312 m³/s) (by slope-area measurement of peak flow).

REMARKS.--Records good.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	63	74	63	59	60	60	64	82	63	76	60	62
2	63	68	63	60	60	60	62	76	62	70	62	62
3	64	66	63	60	60	60	62	74	63	69	61	61
4	66	66	62	60	61	60	60	73	84	71	60	60
5	64	66	64	60	62	60	60	72	98	567	59	60
6	65	65	64	60	61	60	70	71	68	211	59	59
7	64	65	64	63	60	60	77	72	64	92	59	58
8	63	65	62	64	60	59	78	71	63	77	59	57
9	63	65	62	62	59	60	82	70	63	72	59	58
10	63	70	62	64	59	60	76	69	63	66	59	59
11	64	69	62	60	59	60	76	72	66	66	59	59
12	63	67	62	60	59	60	84	69	66	65	60	57
13	66	67	62	60	59	60	90	68	66	63	57	58
14	66	66	62	60	60	60	91	68	64	64	57	58
15	66	65	62	60	59	60	82	67	66	64	57	58
16	64	65	62	60	59	60	83	68	66	63	58	60
17	66	65	62	62	59	60	84	64	101	63	58	60
18	64	65	62	62	60	64	85	64	82	64	57	60
19	63	65	63	57	60	64	85	65	82	62	60	60
20	64	65	62	57	59	70	85	65	72	61	93	60
21	65	65	62	57	59	79	83	64	66	61	64	60
22	64	65	62	57	59	84	78	63	79	62	59	59
23	64	64	62	57	59	90	87	64	68	60	65	59
24	64	64	56	60	62	108	77	65	69	60	64	59
25	64	63	60	62	60	84	76	63	64	60	182	59
26	64	63	62	62	59	72	76	63	149	60	97	59
27	64	63	62	61	59	74	101	63	211	60	72	59
28	65	63	63	60	60	69	348	62	94	60	66	59
29	66	63	62	60	---	68	119	67	85	60	66	60
30	67	63	59	60	---	65	90	64	72	59	65	59
31	68	---	62	60	---	65	---	64	---	59	62	---
TOTAL	1996	1965	1922	1866	1672	2075	2671	2102	2379	2669	2075	1778
MEAN	64.4	65.5	62.0	60.2	59.7	66.9	89.0	67.8	79.3	86.1	66.9	59.3
MAX	68	74	64	64	62	108	348	82	211	567	182	62
MIN	63	63	56	57	59	59	60	62	62	59	57	57
CFSM	.50	.51	.48	.47	.46	.52	.69	.53	.61	.67	.52	.46
IN.	.58	.57	.55	.54	.48	.60	.77	.61	.69	.77	.60	.51

CAL YR 1974 TOTAL 28251 MEAN 77.4 MAX 2020 MIN 51 CFSM .60 IN 8.15
WTR YR 1975 TOTAL 25170 MEAN 69.0 MAX 567 MIN 56 CFSM .53 IN 7.26

05385000 Root River near Houston, Minn.

LOCATION.--Lat 43°46'05", long 91°35'11", in sec.32, T.104 N., R.6 W., Houston County, on right bank 1 mi (1.6 km) west of Houston and 2.5 mi (4.0 km) upstream from South Fork.

DRAINAGE AREA.--1,270 mi² (3,290 km²), approximately.

PERIOD OF RECORD.--May 1909 to September 1917, May to November 1929, March 1930 to current year. Monthly discharge only for some periods, published in WSP 1308.

GAGE.--Water-stage recorder. Datum of gage is 671.86 ft (204.783 m) above mean sea level, datum of 1929. May 28, 1909, to Sept. 30, 1917, nonrecording gage at site 1.5 mi (2.4 km) downstream at different datum. May 4, 1929, to Sept. 27, 1933, nonrecording gage at present site and datum.

AVERAGE DISCHARGE.--53 years (1909-17, 1930-75), 667 ft³/s (18.9 m³/s), 7.13 in/yr (181 mm/yr).

EXTREMES.--Current year: Maximum discharge, 9,430 ft³/s (267 m³/s) Apr. 29 (gage height, 9.74 ft or 2.969 m); minimum, 390 ft³/s (11.0 m³/s) Mar. 14 (gage height, 1.56 ft or 0.475 m).

Period of record: Maximum discharge, 37,000 ft³/s (1,050 m³/s) Apr. 1, 1952 (gage height, 13.90 ft or 4.237 m); maximum gage height, 18.32 ft (5.584 m) Mar. 2, 1965 (backwater from ice); minimum discharge, 65 ft³/s (1.84 m³/s) Dec. 26, 1933, Feb. 25, 1935.

REMARKS.--Records good except those for periods of no gage-height record and those for winter periods, which are fair. Slight diurnal fluctuation at low flows caused by powerplants above station. Water-quality records for the current year are published in Part 2 of this report.

REVISIONS (WATER YEARS).--WSP 895: Drainage area. WSP 1508: 1911-12. WSP 1628: 1948(P).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	580	688	550	470	478	422	952	2950	1010	1350	585	560
2	570	673	540	480	476	420	890	2340	955	1120	590	540
3	572	641	505	450	474	420	852	2030	917	1030	590	525
4	577	621	540	455	472	420	815	1870	991	957	580	505
5	591	604	525	455	470	420	825	1830	1280	1360	575	480
6	598	597	535	540	468	422	868	1660	991	1450	570	480
7	596	590	560	545	466	424	1060	1500	897	1090	560	470
8	587	590	555	510	464	426	1840	1410	858	926	565	480
9	551	583	470	470	462	428	2650	1330	830	864	565	490
10	554	598	500	450	460	430	2030	1460	815	858	555	475
11	551	631	540	440	458	432	1580	1400	823	835	555	468
12	568	615	565	410	456	434	1600	1340	857	820	525	468
13	590	595	575	410	454	436	2120	1660	937	803	520	460
14	595	585	555	450	452	439	2870	1510	898	791	515	484
15	595	575	570	480	450	455	2370	1290	913	777	536	480
16	570	570	580	480	448	484	2130	1170	883	766	554	480
17	555	565	555	478	446	485	2070	1090	913	748	555	484
18	550	570	525	476	444	497	2110	1040	996	734	564	485
19	535	570	525	474	442	507	2120	1070	1320	723	579	498
20	520	550	520	472	440	562	2330	1120	1700	695	599	510
21	520	535	500	470	438	740	1890	1020	1510	670	637	504
22	520	545	520	472	436	1140	1590	999	1460	645	726	500
23	528	545	540	472	434	1540	1510	1170	1410	625	726	495
24	523	550	500	474	432	2040	1790	1110	1370	635	709	490
25	533	540	485	474	430	2090	1960	1040	1160	625	1800	485
26	525	535	475	474	428	1970	1610	976	1080	605	1280	485
27	533	530	485	476	426	1610	1640	939	1780	595	885	485
28	554	540	490	476	424	1410	4030	919	1610	585	745	490
29	586	520	490	476	---	1180	8160	936	1260	580	675	495
30	591	560	480	478	---	1060	4310	975	1340	570	645	500
31	631	---	480	478	---	970	---	1030	---	575	590	---
TOTAL	17449	17411	16235	14575	12628	24713	62372	42184	33768	25407	20655	14751
MEAN	563	580	524	470	451	797	2079	1361	1125	820	666	492
MAX	631	688	580	545	478	2090	8160	2950	1780	1450	1800	560
MIN	520	520	470	410	424	420	815	919	815	570	515	460
CFSM	.44	.46	.41	.37	.36	.63	1.64	1.07	.89	.65	.52	.39
IN.	.51	.51	.48	.43	.37	.72	1.83	1.24	.99	.74	.61	.43

CAL YR 1974 TOTAL 423835 MEAN 1161 MAX 14900 MIN 470 CFSM .91 IN 12.41
WTR YR 1975 TOTAL 302144 MEAN 828 MAX 8160 MIN 410 CFSM .65 IN 8.85

05385500 South Fork Root River near Houston, Minn.

LOCATION.--lat 43°44'19", long 91°33'50", in NE¼SW¼ sec.9, T.103 N., R.6 W., Houston County, on left bank 50 ft (15 m) downstream from bridge on State Highway 76, 0.5 mi (0.8 km) upstream from Badger Creek and 1.5 mi (2.4 km) south of Houston.

DRAINAGE AREA.--275 mi² (712 km²).

PERIOD OF RECORD.--January 1953 to current year

GAGE.--Water-stage recorder. Datum of gage is 680.41 ft (207.39 m) above mean sea level, datum of 1929.

AVERAGE DISCHARGE.--22 years, 131 ft³/s (3.71 m³/s), 6.47 in/yr (164 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,100 ft³/s (31.2 m³/s) Apr. 28 (gage height, 8.24 ft or 2.512 m); minimum, 117 ft³/s (3.31 m³/s) Mar. 3; minimum gage height, 1.74 ft (0.530 m) Jan. 30.

Period of record: Maximum discharge, 11,000 ft³/s (312 m³/s) June 21, 1974 (gage height, 13.81 ft or 4.209 m); minimum discharge, 11 ft³/s (0.31 m³/s) Nov. 28, 1961 (gage height, 1.47 ft or 0.448 m); minimum gage height, 0.85 ft (0.259 m) Aug. 17, 1967.

Flood of Mar. 26, 1950; reached a stage of 12.81 ft (3.904 m), from floodmark.

REMARKS.--Records good except those for winter periods, which are fair. Records of water quality data for the current water year are published in Section 2 of this report.

REVISIONS (WATER YEARS).--WSP 1388: 1953. WSP 1914: 1956(M), 1959(P), 1960.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	163	182	152	140	134	130	185	332	161	166	149	137
2	163	176	150	140	134	133	179	298	157	163	150	135
3	165	163	150	140	134	130	171	278	158	160	152	133
4	165	160	147	140	134	134	166	257	208	160	150	131
5	166	160	147	140	136	140	167	242	198	240	147	130
6	175	158	147	140	138	131	187	231	167	483	146	130
7	170	157	156	140	137	132	250	221	160	276	145	127
8	166	156	152	141	134	127	295	214	156	199	144	125
9	168	156	148	141	131	126	255	206	155	186	144	124
10	162	161	155	143	138	132	221	199	157	186	145	127
11	164	170	147	140	149	127	206	198	161	181	146	124
12	164	164	145	138	150	131	224	205	167	174	144	122
13	165	161	145	138	150	130	263	191	169	171	148	122
14	177	160	144	139	150	126	302	184	164	168	143	122
15	170	158	151	139	150	129	285	180	168	166	141	122
16	165	156	152	140	150	131	287	176	167	164	140	123
17	164	156	146	140	150	132	303	171	171	161	143	123
18	160	156	143	140	139	139	317	172	197	160	139	124
19	157	156	145	140	135	165	307	177	178	159	139	124
20	157	156	142	139	136	156	270	172	170	156	140	124
21	156	153	142	140	137	193	240	167	168	154	140	124
22	155	152	142	142	133	209	226	168	268	153	144	123
23	155	154	142	146	131	422	238	183	220	156	144	123
24	155	156	138	150	138	719	246	201	182	420	142	122
25	154	152	139	148	140	470	225	174	175	183	326	122
26	153	151	140	144	133	288	214	166	171	164	225	122
27	154	152	140	141	130	248	227	163	254	160	155	122
28	158	151	141	139	133	225	806	160	199	157	146	123
29	167	149	141	139	---	208	522	167	175	156	146	126
30	168	151	140	138	---	200	386	173	170	154	143	125
31	174	---	140	135	---	192	---	167	---	150	140	---
TOTAL	5051	4743	4509	4360	3884	6115	8170	6193	5371	5886	4744	3761
MEAN	163	158	145	141	139	197	272	200	179	190	153	125
MAX	177	182	156	150	150	719	806	332	268	483	326	137
MIN	153	149	138	135	130	126	166	160	155	150	139	122
CFSM	.59	.57	.53	.51	.51	.72	.99	.73	.65	.69	.56	.45
IN.	.68	.64	.61	.59	.53	.83	1.11	.84	.73	.80	.64	.51

CAL YR 1974 TOTAL 74635 MEAN 204 MAX 5030 MIN 124 CFSM .74 IN 10.07
WTR YR 1975 TOTAL 62787 MEAN 172 MAX 806 MIN 122 CFSM .63 IN 8.49

PEAK DISCHARGE (BASE, 900 FT³/S).--Mar. 24 (1330) 904 ft³/s (6.90 ft); Apr. 28 (1530) 1,100 ft³/s (8.24 ft).

05457000 Cedar River near Austin, Minn.

LOCATION.--Lat 43°38'10", long 92°58'20", in NE¼SE¼ sec.15, T.102 N., R.18 W., Freeborn County, on left bank 200 ft (61 m) upstream from abandoned powerhouse, 500 ft (152 m) downstream from highway bridge, 1.1 mi (1.8 km) downstream from Turtle Creek, and 1.1 mi (1.8 km) south of Austin.

DRAINAGE AREA.--425 mi^2 (1,100 km^2).

PERIOD OF RECORD.--May 1909 to September 1914, October 1944 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,162.10 ft (354.21 m) above mean sea level, datum of 1929. May 1909 to April 1912, nonrecording gage in tailwater of powerplant 200 ft (61 m) downstream at datum 3.1 ft (0.94 m) lower. May 1912 to September 1914, nonrecording gage on highway bridge 500 ft (152 m) downstream at datum 1.1 ft (0.34 m) lower.

AVERAGE DISCHARGE.--36 years, 190 ft^3/s (5.38 m^3/s), 6.07 in/yr (154 mm/yr).

EXTREMES.--Current year: Maximum discharge, 4,140 ft^3/s (117 m^3/s) Apr. 28 (gage height, 10.67 ft or 3.252 m); minimum, 44 ft^3/s (1.25 m^3/s) Mar. 8 (gage height, 2.20 ft or 0.671 m).
Period of record: Maximum discharge, 9,530 ft^3/s (270 m^3/s) Mar. 29, 1962 (gage height, 17.18 ft or 5.236 m); maximum gage height 18.87 ft (5.752 m) Mar. 1, 1965 (from floodmark, backwater from ice); no flow for several days in 1911.

REMARKS.--Records good. Water-quality data for the current year are published in Part 2 of this report.

REVISIONS (WATER YEARS).--WSP 1145: 1945, 1948.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	62	97	64	52	53	56	260	807	419	589	78	80
2	64	93	64	55	52	56	265	675	346	429	85	77
3	64	80	65	57	54	58	239	986	312	349	77	77
4	67	76	65	53	57	58	246	1360	480	299	76	73
5	67	76	67	52	55	58	266	856	536	275	74	76
6	69	74	67	54	56	57	436	623	387	268	73	71
7	65	73	67	56	56	57	1280	508	307	245	70	69
8	69	74	54	57	53	57	2070	471	270	225	69	68
9	67	73	61	57	52	58	1630	483	260	213	69	69
10	65	80	59	64	54	58	973	475	261	201	123	71
11	93	78	60	65	54	59	932	531	320	192	84	80
12	76	78	61	66	55	59	1590	736	848	180	80	71
13	78	73	62	64	54	60	1850	559	1000	170	77	68
14	80	65	62	62	55	61	1910	435	676	168	71	64
15	76	67	67	60	56	62	1510	345	604	162	72	66
16	74	73	64	58	56	66	1220	305	835	150	70	67
17	73	69	60	57	58	76	1170	285	709	143	69	66
18	71	71	64	55	59	83	1150	275	1080	137	68	67
19	67	73	62	53	58	92	1520	349	2310	126	72	67
20	65	74	61	52	57	119	1110	252	1550	120	71	67
21	65	64	59	54	59	172	739	228	787	115	133	63
22	71	69	59	54	57	291	597	233	736	112	133	64
23	69	74	60	54	55	714	1170	271	792	111	106	64
24	69	65	58	55	59	1210	1450	331	574	117	139	62
25	71	60	55	54	58	1200	1010	304	453	107	340	62
26	65	64	57	51	58	840	900	929	420	96	172	61
27	65	69	59	53	57	549	1060	1020	656	93	114	59
28	71	60	57	54	56	353	3130	488	701	88	98	59
29	78	64	57	55	---	267	2720	568	454	87	94	62
30	76	65	56	56	---	248	1210	739	628	84	87	62
31	91	---	58	55	---	257	---	579	---	82	81	---
TOTAL	2203	2171	1891	1744	1563	7411	35613	17006	19711	5735	3025	2032
MEAN	71.1	72.4	61.0	56.3	55.8	239	1187	549	657	185	97.6	67.7
MAX	93	97	67	66	59	1210	3130	1360	2310	589	340	80
MIN	62	60	54	51	52	56	239	228	260	82	68	59
CFSM	.17	.17	.14	.13	.13	.56	2.79	1.29	1.55	.44	.23	.16
IN.	.19	.19	.17	.15	.14	.65	3.12	1.49	1.73	.50	.26	.18

CAL YR 1974 TOTAL 99630 MEAN 273 MAX 4930 MIN 54 CFSM .64 IN 8.72
WTR YR 1975 TOTAL 100105 MEAN 274 MAX 3130 MIN 51 CFSM .64 IN 8.76

PEAK DISCHARGE (BASE, 1,400 FT^3/S)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
3-24	2300	6.15	1,520	4-28	2215	10.67	4,140
4-08	2200	7.44	2,160	5-04	0515	5.94	1,490
4-14	1030	7.02	1,960	5-26	2130	6.42	1,660
4-19	1200	6.30	1,600	6-19	1800	8.04	2,510
4-24	0115	6.39	1,650				

05476000 Des Moines River at Jackson, Minn.

LOCATION.--Lat 43°37'10", long 94°59'10", in SE¼SW¼ sec.24, T.102 N., R.35 W., Jackson County, on right bank in storage room of city powerplant in Jackson.

DRAINAGE AREA.--1,220 mi² (3,160 km²), approximately.

PERIOD OF RECORD.--May 1909 to December 1913, August 1930 to current year (winter record incomplete prior to 1936). Published as Des Moines River near Jackson, 1930-35, as West Fork Des Moines River near Jackson, 1936-44, and as West Fork Des Moines River at Jackson, 1945-69.

GAGE.--Water-stage recorder. Datum of gage is 1,287.75 ft (392.506 m) above mean sea level, datum of 1929. May 31, 1909, to Dec. 20, 1913, nonrecording gage at site 0.6 mi (1.0 km) downstream at datum 0.99 ft (0.302 m) lower. Aug. 22, 1930, to Sept. 30, 1944, nonrecording gage at site 7 mi (11 km) upstream at datum 17.10 ft (5.212 m) higher. Oct. 1, 1944, to Oct. 26, 1949, nonrecording gage at site 600 ft (183 m) upstream at datum 10.64 ft (3.243 m) higher. Oct. 27, 1949 to Dec. 15, 1965, water-stage recorder 200 ft (61 m) downstream at same datum.

AVERAGE DISCHARGE.--40 years (1935-75), 276 ft³/s (7.82 m³/s), 3.07 in/yr (78 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,180 ft³/s (33.4 m³/s) Apr. 19, 29; maximum gage height, 7.56 ft (2.304 m) Apr. 19; minimum daily discharge, 1.9 ft³/s (0.054 m³/s) Jan. 14-23; minimum gage height, 2.88 ft (0.878 m) Feb. 27, 28.

Period of record: Maximum discharge, 15,700 ft³/s (445 m³/s) Apr. 11, 1969 (gage height, 19.45 ft or 5.928 m); no flow at times.

REMARKS.--Records good except those for winter periods, which are fair. Regulation at times by Yankton, Long, Shetek, and Heron Lakes. Records of water-quality data for the current year are published in Section 2 of this report.

REVISIONS (WATER YEARS).--WSP 1115: 1942. WSP 1175: Drainage area. WSP 1238: 1950. WSP 1308: 1938(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.0	11	12	7.0	2.5	3.3	55	1140	327	367	51	21
2	3.0	15	11	7.0	2.5	3.5	51	1120	311	342	50	21
3	3.7	15	10	7.0	2.6	3.6	49	1120	292	322	29	19
4	7.0	12	9.2	7.0	2.6	3.7	58	1130	349	304	96	19
5	6.8	11	8.8	7.0	2.6	3.8	50	1080	306	302	57	21
6	7.5	9.5	8.8	6.9	2.6	3.9	91	961	291	285	47	19
7	7.1	9.3	8.8	6.9	2.6	4.0	130	893	266	270	42	18
8	6.7	9.9	8.3	6.8	2.6	4.1	188	864	251	252	41	16
9	4.3	12	7.6	6.8	2.6	4.3	196	856	250	239	40	20
10	5.0	13	6.3	5.4	2.6	4.6	212	823	253	224	40	21
11	6.4	13	6.1	3.5	2.6	4.9	279	833	268	214	39	40
12	4.4	11	6.9	2.5	2.6	5.2	320	794	267	201	38	20
13	11	11	7.8	2.0	2.6	5.2	446	743	264	190	37	19
14	12	10	9.0	1.9	2.6	8.0	652	695	270	182	37	16
15	6.4	8.8	9.0	1.9	2.6	5.2	706	652	325	175	34	15
16	7.1	8.8	9.0	1.9	2.6	5.2	858	591	347	166	22	16
17	6.2	9.1	9.0	1.9	2.6	9.0	1070	533	430	162	13	16
18	8.8	11	8.8	1.9	2.6	7.2	1100	494	409	155	12	16
19	6.4	13	6.8	1.9	2.6	20	1160	453	409	142	23	16
20	6.3	24	8.8	1.9	2.6	75	1150	417	400	120	36	18
21	6.2	26	8.8	1.9	2.7	115	1060	397	559	109	37	18
22	6.6	22	8.8	1.9	2.9	115	1020	388	881	104	53	15
23	5.1	21	8.8	1.9	3.3	120	1070	374	803	81	56	13
24	6.3	14	8.4	2.1	8.2	110	965	420	716	50	39	12
25	5.4	15	6.9	2.3	3.3	100	890	602	611	41	32	12
26	5.3	12	6.9	2.4	3.0	95	889	638	541	41	29	10
27	9.3	13	6.9	2.4	3.0	85	935	546	504	44	26	8.9
28	7.9	12	6.9	2.4	5.6	72	1050	468	466	45	26	7.6
29	10	12	7.0	2.4	---	62	1140	423	424	51	24	7.6
30	11	12	7.0	2.4	---	60	1160	383	393	49	23	8.2
31	13	---	7.0	2.4	---	54	---	348	---	49	21	---
TOTAL	213.2	401.4	257.6	113.6	83.7	1171.7	19000	21179	12183	5278	1150	505.5
MEAN	6.88	13.4	8.31	3.66	2.99	37.8	633	683	406	170	37.1	16.9
MAX	13	26	12	7.0	8.2	120	1160	1140	881	367	96	40
MIN	3.0	8.6	6.1	1.9	2.5	3.3	49	348	250	41	12	7.6
CFSM	.006	.01	.007	.003	.002	.03	.52	.56	.33	.14	.03	.01
IN.	.007	.01	.008	.003	.003	.04	.58	.65	.37	.16	.04	.02

CAL YR 1974 TOTAL 46345.8 MEAN 127 MAX 837 MIN 3.0 CFSM .10 IN 1.41
WTR YR 1975 TOTAL 61536.7 MEAN 169 MAX 1160 MIN 1.9 CFSM .14 IN 1.88

PEAK DISCHARGE (BASE, 500 FT³/S)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
4-19	2100	7.56	1,180	5-25	2115	5.83	678
4-29	2230	7.52	1,180	6-22	0230	6.95	992

As the number of streams on which streamflow information is likely to be desired far exceeds the number of stream-gaging stations feasible to operate at one time, the Geological Survey collects limited streamflow data at sites other than stream-gaging stations. When limited streamflow data are collected on a systematic basis over a period of years for use in hydrologic analyses, the site at which the data are collected is called a partial-record station. Data collected at these partial-record stations are usable in low-flow or flood-flow analyses, depending on the type of data collected. In addition, discharge measurements are made at other sites not included in the partial-record program. These measurements are generally made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Records collected at partial-record stations are presented in two tables. The first is a table of discharge measurements at low-flow partial-record stations and the second is a table of annual maximum stage and discharge at crest-stage stations. Discharge measurements made at miscellaneous sites for both low flow and high flow are given in a third table.

Low-flow partial-record stations

Measurements of streamflow in the area covered by this report made at low-flow partial-record stations are given in the following table. Most of these measurements were made during periods of base flow when streamflow is primarily from ground-water storage. These measurements, when correlated with the simultaneous discharge of a nearby stream when continuous records are available, will give a picture of the low-flow potentiality of the stream. The column headed "Period of record" shows the water years in which measurements were made at the same, or practically the same, site.

Discharge measurements made at low-flow partial-record stations during water year 1975

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements Date	Measurements Discharge (cfs)
		Streams tributary to Lake Superior				
*04012500	Poplar River at Lutsen, Minn.	Lat 47°38'23", long 90°42'31", in SW¼NE¼ sec.33, T.60 N., R.3 W., Cook County, 350 feet upstream from bridge on U.S. Highway 61 at Lutsen, and 0.3 mile upstream from mouth.	a114	1912-17‡, 1928-47‡, 1952-61‡, 1962-63, 1970-75	8-19-75	16.3
04018710	Mud Hen Creek near Forbes, Minn.	Lat 47°21'29", long 92°28'24", on line between secs.3 and 10, T.56 N., R.17 W., St. Louis County, at bridge on County Highway 16, 0.9 mile upstream from mouth, 4.5 miles north of Central Lakes, and 6 miles southeast of Forbes.	b101	1970-71, 1973-75	8- 6-75	12.5
04020800	Paleface River near Cotton, Minn.	Lat 47°12'37", long 92°29'17", in NW¼NW¼ sec.34, T.55 N., R.17 W., St. Louis County, at bridge on U.S. Highway 53, about 2 miles upstream from mouth, and 2.9 miles north of Cotton.	b62.6	1970-71, 1973-75	8- 6-75	14.3
04021200	Floodwood River near Floodwood, Minn.	Lat 46°58'05", long 92°54'29", in SW¼SW¼ sec.20, T.52 N., R.20 W., St. Louis County, at bridge on farm driveway, 2.8 miles north of Floodwood, and 3.8 miles upstream from mouth.	190	1970-71, 1973-75	8- 7-75 8-22-75	14.5 4.73
04021250	East Savanna River at Floodwood, Minn.	Lat 46°55'17", long 92°54'43", in SE¼NE¼ sec.7, T.51 N., R.20 W., St. Louis County, at bridge on U.S. Highway 2, 0.4 mile upstream from mouth at Floodwood.	114	1970-71, 1973-75	8- 7-75	2.04
04021530	Stoney Brook at Brookston, Minn.	Lat 46°51'42", long 92°36'17", in NW¼SE¼ sec.34, T.51 N., R.18 W., St. Louis County, at bridge on County Highway 31, 0.8 mile upstream from mouth at Brookston.	b97.3	1970-71, 1973-75	8- 7-75	13.0
04021700	Cloquet River near Brimson, Minn.	Lat 47°15'24", long 91°52'02", in SE¼SW¼ sec.9, T.55 N., R.12 W., St. Louis County, at bridge on County Highway 52 (Forest Service Road 6202), about 1 mile upstream from Pine Creek, and 1.5 miles south of Brimson.	144	1970-71, 1973-75	8- 6-75	24.1
04021960	Cloquet River near Island Lake, Minn.	Lat 47°06'57", long 92°01'28", in SW¼SW¼ sec.32, T.54 N., R.13 W., St. Louis County, at boat launching site on State Forest Road (Carroll Forest Road), 1.7 miles upstream from Little Cloquet River, and 7.5 miles northeast of village of Island Lake.	327	1970-71, 1974-75	8- 6-75	76.4
04022970	Us-Kab-Wan-Ka River near Twig, Minn.	Lat 46°58'55", long 92°20'01", in SE¼SW¼ sec.14, T.52 N., R.16 W., St. Louis County, at bridge on trail, 0.8 mile upstream from mouth, and 6.2 miles north of Twig.	38.9	1970-71, 1973-75	8- 6-75	6.84

* Also a crest-stage partial-record station.
‡ Operated as a continuous-record station.
a Approximately.
b Revised.

Discharge measurements made at low-flow partial-record stations during water year 1975--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
		Streams tributary to Lake Superior--Continued				
04023400	Pine River near Cloquet, Minn.	Lat 46°47'52", long 92°26'58", on line between secs.23 and 24, T.50 N., R.17 W., St. Louis County, at concrete box culvert on State Highway 33, 0.9 mile upstream from mouth, and 5.2 miles north of Cloquet.	43.2	1970-71, 1973-75	8- 7-75	7.32
04024010	Midway River at Thomson, Minn.	Lat 46°40'56", long 92°23'08", in NE¼SE¼ sec.32, T.49 N., R.16 W., Carlton County, at bridge on county road, 0.2 mile north of Thomson city limits, and 0.9 mile upstream from Thomson Reservoir.	b64.2	1968, 1970-71, 1974-75	8- 7-75	6.62
*04024095	Nemadji River near Holyoke, Minn.	Lat 46°31'04", long 92°23'22", in NE¼NE¼ sec.32, T.47 N., R.16 W., Carlton County, at bridge on State Highway 23, 3.5 miles north of Holyoke, about 5 miles upstream from Minnesota-Wisconsin border, and 7 miles south of Wrenshall.	118	1970-71, 1973-75	11- 7-74 8-21-75	81.2 20.1
		Red River of the North basin				
05067900	Sandhill River at Fertile, Minn.	Lat 47°32'35", long 96°15'31", in NE¼NE¼ sec.21, T.147 N., R.44 W., Polk County, at bridge on County Highway 12, about 1 mile northeast of Fertile.	a225	1964-67, 1970-73, 1975	8-20-75	18.6
05073560	Shotley Brook near Shotley, Minn.	Lat 48°04'38", long 94°35'05", in NW¼NE¼ sec.14, T.153 N., R.31 W., Beltrami County, at bridge on County Highway 23, 2 miles upstream from mouth, and 3.2 miles northeast of Shotley.	b42.4	1964-67, 1970-73, 1975	8-21-75	2.01
05073630	South Branch Battle River near Kelliher, Minn.	Lat 47°56'24", long 94°31'54", in NW¼SE¼ sec.31, T.152 N., R.30 W., Beltrami County, at bridge on County Highway 36, 3.4 miles west of Kelliher, and about 11 miles upstream from Lower Red Lake.	b47.1	1964-67, 1970-73, 1975	8-21-75	6.82
05073770	Blackduck River at Quiring, Minn.	Lat 47°52'36", long 94°43'16", in SE¼SE¼ sec.22, T.151 N., R.32 W., Beltrami County, at bridge on County Highway 101, 0.2 mile downstream from South Branch Cormorant River, and 0.5 mile southwest of Quiring.	a200	1964-67, 1971-73, 1975	8-21-75	66.3
05073790	North Branch Cormorant River near Shooks, Minn.	Lat 47°54'19", long 94°32'51", in SW¼SW¼ sec.7, T.151 N., R.30 W., Beltrami County, at bridge on County Highway 36, 5.5 miles northwest of Shooks.	b33.8	1964-67, 1970-73, 1975	8-21-75	1.34
05073980	Sandy River near Red Lake, Minn.	Lat 47°50'44", long 95°13'33", in NE¼NW¼ sec.2, T.150 N., R.36 W., Clearwater County, at U.S. Indian Service Road, 2.5 miles upstream from mouth, and 4.2 miles southwest of village of Red Lake.	b67.9	1964-67, 1970-73, 1975	8-21-75	15.4
05075700	Mud River near Grygla, Minn.	Lat 48°19'31", long 95°44'35", in SE¼SE¼ sec.14, T.156 N., R.40 W., Marshall County, at bridge on State Highway 89, 6 miles west of Grygla.	170	1970-73, 1975	8-19-75	1.14
05078340	Hill River at Brooks, Minn.	Lat 47°49'22", long 96°00'00", in NE¼SW¼ sec.11, T.150 N., R.42 W., Red Lake County, at bridge on U.S. Highway 59, at Brooks.	a185	1933, 1966, 1970-73, 1975	8-20-75	8.22
05078380	Poplar River near Brooks, Minn.	Lat 47°48'13", long 96°03'30", in NW¼NE¼ sec.20, T.150 N., R.42 W., Red Lake County, at bridge on County Highway B3, 2.5 miles upstream from mouth, and 2.8 miles west of Brooks.	a155	1964-67, 1970-73, 1975	8-20-75	10.6

* Also a crest-stage partial-record station.
a Approximately.
b Revised.

Discharge measurements made at low-flow partial-record stations during water year 1975--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements Date	Measurements Discharge (cfs)
		Red River of the North basin--Continued				
05078490	Badger Creek near Red Lake Falls, Minn.	Lat 47°50'48", long 96°13'53", on line between sec.1, T.150 N., R.44 W., and sec.36, T.151 N., R.44 W., Red Lake County, at bridge on County Highway A4, about 1 mile upstream from mouth, and 3 miles southeast of Red Lake Falls.	105	1970-73, 1975	8-20-75	0
05079900	Burnham Creek at Girard, Minn.	Lat 47°43'53", long 96°39'41", in NW¼NE¼ sec.15, T.149 N., R.47 W., Polk County, at bridge on county road, 0.2 mile upstream from U.S. Highway 75, and 0.8 mile northeast of Girard.	b135	1964-67, 1970-73, 1975	8-20-75	0
05082610	Grand Marais Creek near East Grand Forks, Minn.	Lat 48°01'09", long 97°01'13", in NE¼NE¼ sec.2, T.152 N., R.50 W., Polk County, at culvert on State Highway 220, 6 miles upstream from mouth, and 6 miles north of East Grand Forks.	177	1970, 1972-73, 1975	8-20-75	0
05102900	Roseau River near Skime, Minn.	Lat 48°38'30", long 95°35'47", in SE¼SW¼ sec.30, T.160 N., R.38 W., Roseau County, at bridge on County Highway 4, 6.5 miles north of Skime, and about 11 miles southeast of Malung.	134	1971-73, 1975	8-19-75	3.69
05105200	Hay Creek near Salol, Minn.	Lat 48°51'39", long 95°35'39", in SE¼SE¼ sec.7, T.162 N., R.38 W., Roseau County, at culvert on State Highway 11, 1.3 miles southwest of Salol, and about 8.5 miles northeast of Malung.	66.1	1930, 1949, 1971-73, 1975	8-19-75	.23
		Lake of the Woods basin				
05124497	Little Isabella River near Isabella, Minn.	Lat 47°44'24", long 91°30'20", in SE¼NW¼ sec.29, T.61 N., R.9 W., Lake County, at bridge on National Forest Development Road 173, 7 miles upstream from mouth, 10 miles southwest of Forest Center Landing, and 11 miles northwest of Isabella.	48.3	1970-73, 1975	8-11-75	10.6
05129105	Pelican River near Orr, Minn.	Lat 48°08'09", long 92°45'40", in NE¼NE¼ sec.10, T.65 N., R.19 W., St. Louis County, at bridge on trail, 4.5 miles northeast of Cusson, 5.7 miles northeast of Orr, and about 10 miles upstream from mouth.	177	1970-73, 1975	8-12-75	65.5
05129150	Little Indian Sioux River near Buyck, Minn.	Lat 48°08'34", long 92°12'25", in SW¼NW¼ sec.1, T.65 N., R.15 W., St. Louis County, at bridge on County Highway 116 (Echo Trail), 1 mile upstream from Range Line Creek, and 15 miles east of Buyck.	72.0	1970-73, 1975	8-12-75	6.66
05129280	Ash River near Ray, Minn.	Lat 48°20'07", long 92°54'57", in SW¼NW¼ sec.33, T.68 N., R.20 W., St. Louis County, at bridge on county road, 0.5 mile upstream from Black Duck River, 8 miles north of Ash Lake, and 14 miles southeast of Ray.	54.7	1970-73, 1975	8-12-75	4.08
05129380	Rat Root River near Littlefork, Minn.	Lat 48°24'35", long 93°21'55", at center of sec.1, T.68 N., R.24 W., Koochiching County, at bridge on county road, 5.7 miles southwest of Ericsburg, and 9 miles east of Littlefork.	89.6	1970-73, 1975	8-13-75	1.95
05129390	East Branch Rat Root River near Ray, Minn.	Lat 48°26'32", long 93°11'58", on line between secs.29 and 30, T.69 N., R.22 W., Koochiching County, at bridge on County Highway 3, 2 miles north of Ray.	63.9	1970-73, 1975	8-12-75	1.11
05129650	Little Fork River at Cook, Minn.	Lat 47°51'16", long 92°41'56", in NE¼SE¼ sec.13, T.62 N., R.19 W., St. Louis County, at bridge on U.S. Highway 53, 0.6 mile west of Cook.	61.5	1964-66, 1968, 1971-73, 1975	10- 1-74	11.1

b Revised.

Discharge measurements made at low-flow partial-record stations during water year 1975--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
		Lake of the Woods basin--Continued				
05129920	Little Fork River near Gheen, Minn.	Lat 47°51'46", long 92°54'15", in NE¼NW¼ sec.16, T.62 N., R.20 W., St. Louis County, at bridge on State Highway 1, 2.5 miles east of Meadow Brook, and 8.5 miles southwest of Gheen.	a290	1970-73, 1975	8-15-75	14.9
05131310	Bear River near Togo, Minn.	Lat 47°49'20", long 93°03'04", on line between secs.29 and 32, T.62 N., R.21 W., St. Louis County, at bridge on County Highway 5, 2 miles upstream from mouth, and 4.5 miles east of Togo.	a170	1970-73, 1975	8-15-75	19.5
05131320	Sturgeon River near Togo, Minn.	Lat 47°51'56", long 93°02'07", on line between secs.9 and 16, T.62 N., R.21 W., St. Louis County, at bridge on State Highway 1, 2 miles upstream from mouth, 3.8 miles west of Meadow Brook, and 6 miles northeast of Togo.	a375	1970-73, 1975	8-15-75	75.1
05131325	Valley River near Rauch, Minn.	Lat 47°57'43", long 93°11'26", in SE¼NE¼ sec.7, T.63 N., R.22 W., Koochiching County, at bridge on County Highway 57, 2 miles upstream from mouth, 2 miles west of Rauch, and 9.5 miles northwest of Togo.	68.5	1970-73, 1975	8-15-75	1.85
05131470	Nett Lake River near Littlefork, Minn.	Lat 48°13'00", long 93°26'40", in SE¼SE¼ sec.8, T.66 N., R.24 W., Koochiching County, at bridge on County Highway 8, 2.2 miles upstream from mouth, and 13 miles southeast of Littlefork.	a215	1970-73 1975	8-13-75	136
05131510	Beaver Brook near Littlefork, Minn.	Lat 48°24'12", long 93°30'57", on line between secs.2 and 11, T.68 N., R.25 W., Koochiching County, at bridge on State Highway 217, 1.5 miles upstream from mouth, and 1.5 miles east of Littlefork.	97.4	1970-73, 1975	8-13-75	2.32
05131600	Bowstring River near Talmoon, Minn.	Lat 47°32'12", long 93°47'45", on line between secs.23 and 24, T.147 N., R.25 W., Itasca County, at bridge on State Highway 6, 0.4 mile south of Bowstring, and 4.5 miles southwest of Talmoon.	90.2	1969-72, 1975	8-18-75	11.3
05131760	Rice River near Bigfork, Minn.	Lat 47°40'28", long 93°39'17", on line between secs.16 and 21, T.60 N., R.26 W., Itasca County, at bridge on County Highway 254, 5 miles south of Bigfork.	82.8	1969-72, 1975	8-14-75	20.8
05131770	Gale Brook near Bigfork, Minn.	Lat 47°43'22", long 93°39'26", in NE¼NW¼ sec.4, T.60 N., R.26 W., Itasca County, at culvert on County Highway 7, 1.5 miles south of Bigfork.	27.8	1969-72, 1975	8-14-75	c.01
05131880	Bowerman Brook at Caldwell Road near Effie, Minn.	Lat 47°56'44", long 93°45'52", in SW¼SW¼ sec.14, T.63 N., R.27 W., Koochiching County, at culvert on Caldwell Road, 8 miles northwest of Effie.	25.9	1970-72, 1975	8-14-75	0
05131900	Caldwell Brook at Caldwell Road near Effie, Minn.	Lat 47°57'15", long 93°52'54", in NW¼SW¼ sec.29, T.152 N., R.25 W., Koochiching County, at bridge on Caldwell Road, 12 miles northwest of Effie.	122	1969-72, 1975	8-14-75	2.16
05132200	Sturgeon River near Big Falls, Minn.	Lat 48°12'57", long 93°55'54", in NE¼SE¼ sec.26, T.155 N., R.26 W., Koochiching County, at bridge on County Highway 30, 6.2 miles northwest of Big Falls.	a280	1970-72, 1975	8-13-75	8.27
05132400	Bear River near Littlefork, Minn.	Lat 48°24'13", long 93°41'21", on line between secs.4 and 9, T.68 N., R.26 W., Koochiching County, at bridge on County Highway 1, 5.5 miles west of Littlefork.	105	1969-72, 1975	8-13-75	1.49
05132900	Black River near Loman, Minn.	Lat 48°27'19", long 93°49'38", in SW¼SE¼ sec.34, T.158 N., R.25 W., Koochiching County, at end of county road, near farm house, 4 miles southwest of Loman.	a280	1970-72, 1975	8-11-75	2.03

a Approximately.
c Estimated.

Discharge measurements made at low-flow partial-record stations during water year 1975--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
		Lake of the Woods basin--Continued				
05133200	West Fork Black River near Loman, Minn.	Lat 48°31'37", long 93°49'54", in SE¼SW¼ sec.3, T.158 N., R.25 W., Koochiching County, at bridge on County Highway 82, 1.6 miles northwest of Loman.	a288	1969-72, 1975	8-11-75	.09
05134100	North Branch Rapid River near Baudette, Minn.	Lat 48°31'56", long 94°38'50", in NW¼SW¼ sec.4, T.158 N., R.31 W., Lake of the Woods County, at bridge on County Highway 1, 13 miles southwest of Baudette.	a180	1969-72, 1975	8-12-75	2.11
05135000	East Fork Rapid River near Clementson, Minn.	Lat 48°40'00", long 94°24'33", in NE¼NE¼ sec.19, T.160 N., R.29 W., Koochiching County, at Eidems Rapid, 1.9 miles upstream from Rapid River, and 2 miles southeast of Clementson.	a300	1970-72, 1975	8-11-75	.73
05135100	Rapid River at Clementson, Minn.	Lat 48°41'28", long 94°25'59", in NE¼SE¼ sec.12, T.160 N., R.30 W., Lake of the Woods County, at bridge on State Highway 11 at Clementson, 0.3 mile upstream from mouth.	a700	1969-72, 1975	8-11-75	45.8
05136000	Baudette River near Baudette, Minn.	Lat 48°39'25", long 94°37'23", on line between secs.22 and 27, T.160 N., R.31 W., Lake of the Woods County, at bridge on county road, 4 miles southwest of Baudette.	45.6	1969-72, 1975	8-12-75	.004
05137000	Winter Road River near Baudette, Minn.	Lat 48°42'51", long 94°41'50", in SE¼SE¼ sec.36, T.161 N., R.32 W., Lake of the Woods County, at bridge on old State Highway 11, 4.5 miles west of Baudette.	145	1969-72, 1975	8-12-75	2.07
05138000	Lake of the Woods County ditch No. 1 near Williams, Minn.	Lat 48°50'38", long 94°57'32", in NE¼NE¼ sec.24, T.162 N., R.34 W., Lake of the Woods County, at triple box culvert on County Highway 2, 5.2 miles north of Williams.	17.5	1969-72, 1975	8-12-75	.48
		Leech Lake River basin				
05204400	Boy River at Longville, Minn.	Lat 46°59'00", long 94°12'33", in NW¼SE¼ sec.34, T.141 N., R.28 W., Cass County, at bridge on State Highway 84, at Girl Lake outlet at Longville.	a160	1953-54, 1964-65, 1970-71, 1973, 1975	8-11-75	52.8
05205200	Boy River near Remer, Minn.	Lat 47°04'51", long 94°05'54", in SE¼SE¼ sec.28, T.142 N., R.27 W., Cass County, at bridge on County Highway 53, 1.5 miles upstream from Boy Lake, and about 9 miles northwest of Remer.	a310	1964-65, 1970-71, 1973, 1975	8-11-75	102
		Willow River basin				
05220670	Willow River near Hill City, Minn.	Lat 46°54'00", long 93°36'50", on line between secs.14 and 15, T.51 N., R.26 W., Aitkin County, at bridge on U.S. Highway 169, 6 miles south of intersection of State Highway 200 with U.S. Highway 169 at south edge of Hill City.	a160	1964-65, 1970-71, 1973-75	8-18-75	72.6
*05221020	Willow River below Palisade, Minn.	Lat 46°42'36", long 93°33'21", in NW¼NE¼ sec.30, T.49 N., R.25 W., Aitkin County, at bridge on County Highway 3, 3.2 miles west of Palisade.	a445	1964-65, 1970-75	8-18-75	114
		Rice River basin				
05222200	Rice River at Hassman, Minn.	Lat 46°35'57", long 93°36'47", on line between secs.34 and 35, T.48 N., R.26 W., Aitkin County, at bridge on U.S. Highway 169, 0.5 mile south of intersection of U.S. Highways 169 and 210 at Hassman.	a284	1945, 1949, 1964-65, 1970-71, 1973-75	8-18-75	11.8

* Also a crest-stage partial-record station.
a Approximately.

Discharge measurements made at low-flow partial-record stations during water year 1975--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
		Ripple River basin				
05227480	Ripple River at Aitkin, Minn.	Lat 46°31'47", long 93°42'26", in NE¼NE¼ sec.26, T.47 N., R.27 W., Aitkin County, at bridge on U.S. Highway 169, 0.2 mile south of intersection of U.S. Highways 169 and 210 in Aitkin, and 0.8 mile upstream from mouth.	a125	1964-65, 1970-71, 1973, 1975	8-11-75	65.9
		Pine River basin				
05229500	Pine River near Jenkins, Minn.	Lat 46°41'37, long 94°18'14", in NE¼SE¼ sec.11, T.137 N., R.29 W., Crow Wing County, at bridge on County Highway 15, 0.8 mile upstream from Upper Whitefish Lake, and 3.5 miles northeast of Jenkins.	a285	1964-65, 1970-71, 1973, 1975	8-19-75	56.6
05235500	Little Pine River near Cross Lake, Minn.	Lat 46°37'48", long 93°59'04", in SW¼SW¼ sec.33, T.137 N., R.26 W., Crow Wing County, at bridge on county road, 5 miles upstream from mouth, 6 miles southeast of town of Cross Lake, and about 10 miles north of Crosby.	a195	1964-65, 1970-71, 1973, 1975	8-19-75	12.8
		Crow Wing River basin				
05242960	Crow Wing River near Hubbard, Minn.	Lat 46°50'48", long 94°52'29", in NE¼NE¼ sec.20, T.139 N., R.33 W., Hubbard County, at bridge on State Highway 87, at Third Crow Wing Lake outlet, and 6.6 miles east of Hubbard.	a218	1930-31, 1964-66, 1970-71, 1973, 1975	10- 4-74 7-29-75	105 112
05243725	Straight River near Park Rapids, Minn.	Lat 46°52'30", long 95°03'56", in NW¼NE¼ sec.11, T.139 N., R.35 W., Hubbard County, at bridge on U.S. Highway 71, 3.2 miles south of Park Rapids, and 3.7 miles northwest of Hubbard.	53.2	1970-71, 1973, 1975	10- 2-74 7-29-75	58.4 56.1
05243730	Fishhook River near Hubbard, Minn.	Lat 46°51'48", long 95°01'30", in NW¼NE¼ sec.18, T.139 N., R.34 W., Hubbard County, at bridge on State Highway 87, 0.5 mile downstream from Straight River, 2 miles northwest of Hubbard, and 4.4 miles southeast of Park Rapids.	a374	1964-66, 1970-71, 1973, 1975	10- 2-74 7-29-75	96.2 130
05243740	Long Lake outlet at Hubbard, Minn.	Lat 46°50'28", long 95°00'44", in SW¼NW¼ sec.20, T.139 N., R.34 W., Hubbard County, at bridge on State Highway 87, at Hubbard.	b22.5	1964-66, 1970-71, 1973, 1975	10- 3-74 7-28-75	11.0 17.0
05243750	Shell River near Hubbard, Minn.	Lat 46°49'47", long 95°01'53", in SW¼NW¼ sec.30, T.139 N., R.34 W., Hubbard County, at bridge on county road, just downstream from Fishhook River, and 1.2 miles southwest of Hubbard.	a600	1964-66, 1970-71, 1973, 1975	10- 3-74 7-29-75	146 215
05244410	Redeye River at Sebeka, Minn.	Lat 46°37'44", long 95°05'42", in NE¼NE¼ sec.4, T.136 N., R.35 W., Wadena County, at bridge on U.S. Highway 71, at Sebeka.	138	1968-71, 1973, 1975	7-30-75	16.3
05244420	Redeye River near Aldrich, Minn.	Lat 46°29'58", long 94°54'30", on line between secs.13 and 24, T.135 N., R.34 W., Wadena County, at bridge on County Highway 7, 1.5 miles upstream from mouth, 3.5 miles north of Central, and 8.5 miles north of Aldrich.	b221	1964-66, 1968-71, 1973-75	10- 4-74 7-30-75	25.8 35.7
*05244440	Leaf River near Aldrich, Minn.	Lat 46°27'25", long 94°50'29", in SW¼SW¼ sec.34, T.135 N., R.33 W., Wadena County, at bridge on County Highway 29, 2.3 miles upstream from mouth, and 7 miles northeast of Aldrich.	860	1968, 1970-75	10- 1-74 10- 4-74 7-31-75	133 118 120
05244470	Partridge River near Aldrich, Minn.	Lat 46°25'02", long 94°50'28", in NW¼SW¼ sec.15, T.134 N., R.33 W., Wadena County, at bridge on County Highway 29, 0.7 mile upstream from mouth, and 5.5 miles northeast of Aldrich.	b93.5	1964-71, 1973-75	10- 5-74 7-30-75	5.64 5.89

* Also a crest-stage partial-record station.
a Approximately.
b Revised.

Discharge measurements made at low-flow partial-record stations during water year 1975--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
		Nokasippi River basin				
05261351	Nokasippi River near Brainerd, Minn.	Lat 46°15'45", long 94°06'44", in NW¼SE¼ sec.27, T.44 N., R.30 N., Crow Wing County, at bridge on State Highway 25, 7.8 miles southeast of Brainerd.	69.9	1969-70, 1975	10- 2-74	6.59
05261440	Daggett Brook near Crow Wing, Minn.	Lat 46°13'42", long 94°07'15", on line between secs.3 and 10, T.43 N., R.30 W., Crow Wing County, at bridge on county road, 9.1 miles southeast of Crow Wing.	47.7	1969-70, 1975	10- 2-74	2.47
05261520	Nokasippi River below Fort Ripley, Minn.	Lat 46°12'02", long 94°19'03", on line between secs.13 and 24, T.43 N., R.32 W., Crow Wing County, at bridge on County Highway 2, 3 miles northeast of Fort Ripley.	178	1968-70, 1975	10- 2-74	27.3
		Fletcher Creek basin				
05262500	Fletcher Creek at Camp Ripley Junction, Minn.	Lat 46°03'46", long 94°19'39", in NE¼SW¼ sec.1, T.41 N., R.32 W., Morrison County, at box culvert on U.S. Highway 371, 0.5 mile upstream from mouth, and 0.6 mile south of Camp Ripley Junction.	19.2	1969-70, 1975	10- 1-74	.05
		Elk River basin				
05263000	Elk River near Little Falls, Minn.	Lat 46°01'13", long 94°22'38", in NW¼NE¼ sec.6, T.129 N., R.29 W., Morrison County, at bridge on County Highway 13, 1 mile upstream from mouth, and 3 miles north of Little Falls.	b152	1968-70, 1973-75	10- 3-74	2.04
		Swan River basin				
05265500	Swan River near Flensburg, Minn.	Lat 45°56'03", long 94°34'57", in SW¼SE¼ sec.33, T.129 N., R.31 W., Morrison County, at bridge on county road, 2.8 miles southwest of Flensburg.	137	1969-70, 1975	10- 3-74	6.52
05265700	Swan River near Little Falls, Minn.	Lat 45°56'00", long 94°24'34", in NW¼NW¼ sec.1, T.128 N., R.30 W., Morrison County, at bridge on State Highway 238, 2.4 miles upstream from mouth, and 3 miles southwest of Little Falls.	b167	1968-70, 1975	10- 3-74	15.1
		North Branch Two Rivers basin				
05267200	North Branch Two Rivers near Bowlus, Minn.	Lat 45°49'56", long 94°21'38", in NE¼NW¼ sec.8, T.127 N., R.29 W., Morrison County, at bridge on County Highway 224, 0.3 mile upstream from mouth, and 2.2 miles northeast of Bowlus.	23.0	1969-70, 1973-75	10- 3-74 8-22-75	1.70 2.01
		Two Rivers basin				
05267400	Two Rivers near Bowlus, Minn.	Lat 45°49'19", long 94°21'45", in SW¼SW¼ sec.8, T.127 N., R.29 W., Morrison County, at bridge on County Highway 25, 0.5 mile upstream from mouth, and 2 miles east of Bowlus.	b158	1968-70, 1975	10- 3-74	1.98
		Spunk Creek basin				
05267580	Spunk Creek near Royalton, Minn.	Lat 45°47'04", long 94°18'54", in SW¼NE¼ sec.27, T.127 N., R.29 W., Morrison County, at bridge on County Highway 21, 1.5 miles upstream from mouth, and 3.5 miles southwest of Royalton.	83.6	1968-70, 1973-75	10- 3-74	3.79
		Platte River basin				
05267700	Platte River near Harding, Minn.	Lat 46°05'27", long 94°06'10", on line between secs.26 and 27, T.24 N., R.30 W., Morrison County, at triple box culvert on State Highway 25, 3.5 miles southwest of Harding.	101	1969-70, 1975	10- 1-74	1.01

b Revised.

Discharge measurements made at low-flow partial-record stations during water year 1975--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
		Platte River basin--Continued				
05267810	Big Mink Creek near Pierz, Minn.	Lat 46°00'22", long 94°10'00", on line between secs.29 and 30, T.41 N., R.30 W., Morrison County, at bridge on county road, 3.6 miles northwest of Pierz.	18.6	1969-70, 1975	10- 1-74	1.04
05267830	Little Mink Creek near Pierz, Minn.	Lat 45°59'12", long 94°11'15", on line between sec.31, T.41 N., R.30 W., and sec.36, T.41 N., R.31 W., Morrison County, at bridge on County Highway 255, 4.1 miles west of Pierz.	18.8	1969, 1975	10- 1-74	.05
05267890	Skunk River near Pierz, Minn.	Lat 45°59'00", long 94°04'52", on line between sec.9, T.40 N., R.30 W., and sec.36, T.41 N., R.30 W., Morrison County, at double box culvert on County Highway 39, 1.1 miles east of Pierz.	55.6	1969-70, 1973-75	10- 1-74 8-22-75	5.11 14.7
*05267900	Hillman Creek near Pierz, Minn.	Lat 45°58'27", long 94°04'21", in NE¼SE¼ sec.9, T.40 N., R.30 W., Morrison County, at bridge on county road, 1.1 miles upstream from mouth, and 1.5 miles east of Pierz.	46.7	1963-65, 1968-70, 1975	10- 1-74 5-12-75 6-12-75 7-16-75	c.10 29.6 12.1 6.61
05267930	Skunk River near Buckman, Minn.	Lat 45°55'56", long 94°10'41", in SE¼SE¼ sec.27, T.40 N., R.31 W., Morrison County, at bridge on county road, 4.6 miles northwest of Buckman.	b133	1969-70 1973-75	10- 1-74 8-21-75	10.3 15.0
05267950	Buckman Creek near Buckman, Minn.	Lat 45°54'42", long 94°11'58", on line between sec.4, T.39 N., R.31 W., and sec.33, T.40 N., R.31 W., Morrison County, at bridge on county road, 5.2 miles northwest of Buckman.	32.8	1969, 1975	10- 1-74	0
05267970	Rice Creek near Little Falls, Minn.	Lat 45°57'21", long 94°14'14", on line between secs.17 and 20, T.40 N., R.31 W., Morrison County, at triple culvert on county road, 0.7 mile upstream from Rice Lake, and 6.1 miles east of Little Falls.	37.8	1969-70, 1975	10- 2-74	1.97
		Little Rock Creek basin				
05268500	Little Rock Creek near Royalton, Minn.	Lat 46°49'50", long 94°12'02, in SE¼NE¼ sec.33, T.39 N., R.31 W., Morrison County, at triple box culvert on County Highway 26, 4.5 miles east of Royalton.	34.2	1969-70, 1973-75	10- 1-74 8-22-75	.91 2.69
05268700	Little Rock Creek at Rice, Minn.	Lat 45°45'48", long 94°12'15", in NW¼NE¼ sec.28, T.38 N., R.31 W., Benton County, at bridge on County Highway 12, at northeast corner of Rice, and 2 miles upstream from Little Rock Lake.	73.4	1969-70, 1975	10- 2-74	10.3
		Sauk River basin				
05270110	Sauk River near Little Sauk, Minn.	Lat 45°50'47", long 94°54'47", in NE¼NE¼ sec.2, T.127 N., R.34 W., Todd County, at bridge on county road, 1.1 miles south of Little Sauk.	191	1969-70, 1975	10- 4-74	9.09
05270210	Adley Creek near Melrose, Minn.	Lat 45°41'00", long 94°46'13", in NE¼NE¼ sec.36, T.126 N., R.33 W., Stearns County, at culvert on County Highway 168, 0.1 mile upstream from mouth, and 2.2 miles east of Melrose.	87.8	1969-70, 1975	10- 4-74	2.22
		Johnson Creek basin				
*05272300	Johnson Creek near St. Augusta, Minn.	Lat 45°27'49", long 94°09'19", in NW¼SW¼ sec.13, T.123 N., R.28 W., Stearns County, at bridge on County Highway 7, 1.0 mile south of St. Augusta, and 3.3 miles upstream from mouth.	46.7	1964-65, 1968-71, 1972-75	5-15-75 6-11-75 7-15-75 9-30-75	40.7 28.4 23.5 11.6

* Also a crest-stage partial-record station.
b Revised.
c Estimated.

Discharge measurements made at low-flow partial-record stations during water year 1975--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
		Crow River basin				
05278590	South Fork Crow River at Biscay, Minn.	Lat 44°50'11", long 94°17'16", in SE¼SW¼ sec.23, T.116 N., R.29 W., McLeod County, at bridge on State Highway 22, 1 mile northwest of Biscay.	a495	1969-71, 1975	8-28-75	24.1
05278830	Buffalo Creek near Buffalo Lake, Minn.	Lat 44°46'05", long 94°32'48", in SW¼NE¼ sec.15, T.115 N., R.31 W., Renville County, at bridge on County Highway 25, just upstream from right bank tributary, 2 miles northwest of Stewart, and 2 miles northeast of town of Buffalo Lake.	127	1969-72, 1975	8-28-75	5.98
05278835	Renville County Judicial ditch No. 15 near Buffalo Lake, Minn. (Formerly published as Buffalo Creek tributary No.2)	Lat 44°46'05", long 94°32'55", in NW¼SE¼ sec.15, T.115 N., R.31 W., Renville County, 0.1 mile upstream from mouth, in vicinity of County Highway 25 bridge over Buffalo Creek, 2 miles northwest of Stewart, and 2 miles northeast of town of Buffalo Lake.	94.9	1969-72, 1975	8-28-75	3.35
05278950	Buffalo Creek near Plato, Minn.	Lat 44°48'03", long 94°02'24", in NW¼NE¼ sec.2, T.115 N., R.27 W., McLeod County, at bridge on County Highway 9, 2 miles north of Plato, and 6 miles northeast of Glencoe.	407	1969-72, 1975	8-28-75	7.11
		Rum River basin				
05284500	Rum River at Onamia, Minn.	Lat 46°03'40", long 93°39'43", in NE¼SE¼ sec.6, T.41 N., R.26 W., Mille Lacs County, at bridge on U.S. Highway 169, 0.2 mile upstream from Black Brook, and 0.8 mile south of Onamia.	b464	1910-12‡, 1946-47, 1952-53, 1965, 1968-70, 1973, 1975	10-14-74	139
05284660	Rum River near Milaca, Minn.	Lat 45°46'44", long 93°39'29", on line between secs.13 and 24, T.38 N., R.27 W., Mille Lacs County, at bridge on County Highway 9, 1.8 miles north of Milaca.	b671	1968-70, 1975	10-14-74	111
05284710	West Branch Rum River at Princeton, Minn.	Lat 45°34'24", long 93°34'47", in NW¼NE¼ sec.33, T.36 N., R.26 W., Mille Lacs County, at bridge on U.S. Highway 169 at Princeton, 0.1 mile upstream from mouth.	b184	1961, 1965, 1968-70, 1975	10-14-74	9.18
05284810	Green Lake Brook at West Point, Minn.	Lat 45°33'49", long 93°23'20", in NE¼SE¼ sec.36, T.36 N., R.25 W., Isanti County, at bridge on State Highway 47, 0.2 mile upstream from mouth, and 0.5 mile north of West Point.	b29.7	1965, 1969-70, 1975	10-11-74	9.93
05284950	Stanchfield Creek at Springvale, Minn.	Lat 45°36'58", long 93°18'06", on line between secs.11 and 14, T.36 N., R.24 W., Isanti County, at bridge on County Highway 32, 1 mile south of Springvale, and 3 miles northeast of Walba.	b92.6	1965, 1968-70, 1975	10-11-74	10.1
05284970	Lower Stanchfield Creek near Grandy, Minn.	Lat 45°37'50", long 93°13'46", in SW¼SE¼ sec.5, T.36 N., R.23 W., Isanti County, at culvert on County Highway 6, 0.1 mile downstream from Little Stanchfield Lake, and 1.9 miles southwest of Grandy.	b40.9	1969-70, 1975	10-11-74	4.48
05285300	Long Lake Outlet near Isanti, Minn.	Lat 45°26'31", long 93°19'14", on line between secs.10 and 15, T.34 N., R.24 W., Isanti County, at culvert on county road, 4.5 miles northeast of St. Francis, and 5.3 miles southwest of Isanti.	b15.4	1965, 1969-70, 1975	10-11-74	3.09

‡ Operated as a continuous-record station.
a Approximately.
b Revised.

Discharge measurements made at low-flow partial-record stations during water year 1975--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
		Rum River basin--Continued				
05286800	Trott Brook near Nowthen, Minn.	Lat 45°17'16", long 93°25'08", in SW¼SE¼ sec.2, T.32 N., R.25 W., Anoka County, at bridge on State Highway 47, 0.8 mile upstream from mouth, and 3.9 miles southeast of Nowthen.	b72.0	1965, 1969-70, 1974-75	9-29-75	20.6
		Minnesota River basin				
05292400	Stony Run at Odessa, Minn.	Lat 45°16'09", long 96°20'36", on line between secs.20 and 29, T.121 N., R.45 W., Big Stone County, at culvert on U.S. Highway 75, 0.8 mile northwest of Odessa, and 1 mile upstream from mouth.	125	1963-64, 1970, 1973-75	9-29-75	.52
05292900	South Fork Yellow Bank River near Bellingham, Minn.	Lat 45°10'31", long 96°21'14", in NE¼SE¼ sec.25, T.120 N., R.46 W., Lac qui Parle County, at bridge on county road, 0.7 mile upstream from North Fork, and 4.4 miles northwest of Bellingham.	199	1963-64, 1970, 1973-75	9-29-75	0
05293003	Lac qui Parle County ditch No. 13 near Bellingham, Minn.	Lat 45°11'21", long 96°14'21", near center of sec.24, T.120 N., R.45 W., Lac qui Parle County, at bridge on county road, 3 miles upstream from mouth, and 4 miles northeast of Bellingham.	46.0	1963-64, 1970, 1973-75	9-29-75	.49
05293006	Five Mile Creek near Correll, Minn.	Lat 45°13'21", long 96°06'56", in NE¼NW¼ sec.12, T.120 N., R.44 W., Big Stone County, at culvert on State Highway 7, 2.3 miles east of Correll, and 3.5 miles upstream from mouth.	85.3	1963-64, 1970, 1973-75	9-29-75	.88
05293370	Pomme de Terre River near Elbow Lake, Minn.	Lat 45°59'06", long 95°53'37", in NE¼SE¼ sec.13, T.129 N., R.42 W., Grant County, at bridge on county road, 1 mile downstream from Pomme de Terre Lake, and 4 miles east of Elbow Lake.	a334	1963-65, 1970, 1973-75	9-30-75	15.1
05293600	Mud Creek near Morris, Minn.	Lat 45°32'26", long 95°54'44", on line between secs.22 and 23, T.124 N., R.42 W., Stevens County, at culvert on U.S. Highway 59, 1 mile upstream from mouth, and 3 miles south of Morris.	a137	1963-65, 1970, 1973-75	9-30-75	.07
05294500	Emily Creek near Louisborg, Minn.	Lat 45°05'38", long 96°00'02", in NE¼NE¼ sec.26, T.119 N., R.43 W., Lac qui Parle County, at twin culverts on county road, 1 mile upstream of mouth, and 9.7 miles southeast of Louisborg.	34.4	1963-64, 1970, 1973-75	9-29-75	1.19
05299600	Lazarus Creek near Canby, Minn.	Lat 44°49'16", long 96°11'43", on line between secs.29 and 30, T.116 N., R.44 W., Lac qui Parle County, at bridge on U.S. Highway 75, 8.5 miles northeast of Canby.	a120	1964-66, 1970, 1973-75	8-18-75	.09
05299800	West Branch Lac qui Parle River at Dawson, Minn.	Lat 44°55'47", long 96°03'01", in S½NE¼ sec.21, T.117 N., R.43 W., Lac qui Parle County, at dam, about 400 ft downstream from railroad and highway bridge in Dawson.	a485	1963-66, 1968-70, 1973-75	8-18-75	0
*05305200	Spring Creek near Montevideo, Minn.	Lat 45°58'41", long 95°42'57", in NW¼NW¼ sec.5, T.117 N., R.40 W., Chippewa County, at culvert on State Highway 29, 1.2 miles upstream from mouth, and 2.0 miles north of Montevideo.	16.0	1961-62, 1964, 1967-75	10-31-74	.60
05311350	Yellow Medicine River near Minneota, Minn.	Lat 44°37'25", long 95°59'30", on line between secs.1 and 2, T.113 N., R.43 W., Lyon County, at bridge on County Highway 3, 3 miles upstream from South Branch Yellow Medicine River, and 4.4 miles north of Minneota.	189	1963-66, 1969, 1973-75	8-18-75	.20

* Also a crest-stage partial-record station.
a Approximately.
b Revised.

Discharge measurements made at low-flow partial-record stations during water year 1975--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
		Minnesota River basin--Continued				
05315300	Three Mile Creek near Ghent, Minn.	Lat 44°31'30", long 95°50'12", on line between sec.7, T.112 N., R.41 W., and sec.12, T.112 N., R.42 W., Lyon County, at bridge on County Highway 65, 2.9 miles northeast of Ghent.	73.4	1969, 1973-75	8-18-75	.69
05316840	Cottonwood River near Tracy, Minn.	Lat 44°20'41", long 95°36'50", on line between secs.11 and 12, T.110 N., R.40 W., Lyon County, at bridge on County Highway 11, 7.2 miles north of Tracy.	76.7	1968-69, 1973-75	9-30-75	1.07
05316895	Highwater Creek near Lamberton, Minn.	Lat 44°12'36", long 95°14'45", on line between secs.25 and 36, T.109 N., R.37 W., Redwood County, at bridge on County Highway 15, 1.9 miles southeast of Lamberton.	108	1969, 1973-75	9-29-75	.83
05316910	Dry Creek at Sanborn, Minn.	Lat 44°11'43", long 95°08'15", on line between sec.35, T.109 N., R.36 W., Redwood County and sec.2, T.108 N., R.36 W., Cottonwood County, at bridge on County Highway 41, at the southwest limits of Sanborn, and 1.5 miles upstream from mouth.	39.6	1969, 1973-75	9-29-75	.22
05316970	Cottonwood River at Leavenworth, Minn.	Lat 44°13'39", long 94°48'22", on line between secs.21 and 22, T.109 N., R.33 W., Brown County, at bridge on County Highway 8, 0.2 mile north of Leavenworth.	a850	1966-70, 1973-75	9-29-75	3.65
05318160	Lily Creek near Fairmont, Minn.	Lat 43°40'47", long 94°29'30", in NW¼SW¼ sec.31, T.103 N., R.30 W., Martin County, at culvert on Interstate 90, 1.5 miles upstream from mouth, and 2.3 miles northwest of Fairmont.	41.7	1969-71, 1975	10- 2-74	c.05
05318200	Elm Creek near Trimont, Minn.	Lat 43°45'15", long 94°39'10", in SW¼NW¼ sec.2, T.103 N., R.32 W., Martin County, at bridge on county road, 0.1 mile east of County Highway 52, and 3 miles east of Trimont.	128	1969, 1971, 1975	10- 2-74	0
05318220	Cedar Creek near Trimont, Minn.	Lat 43°45'51", long 94°39'16", on line between secs.34 and 35, T.104 N., R.32 W., Martin County, at bridge on County Highway 52, 2 miles upstream from mouth, and 3 miles east of Trimont, Minn.	54.0	1969-71, 1974-75	10- 2-74	0
05318700	Watonwan River at La Salle, Minn.	Lat 44°03'53", long 94°35'22", on line between secs.19 and 20, T.107 N., R.31 W., Watonwan County, at bridge on county road, 1 mile southwest of La Salle.	a210	1968-70, 1974-75	10- 2-74 9-29-75	.25 .07
05318800	St. James Creek near La Salle, Minn.	Lat 44°03'04", long 94°33'27", on line between secs.21 and 28, T.107 N., R.31 W., Watonwan County, at bridge on County Highway 3, 100 ft downstream from Butterfield Creek, and 1.4 miles southeast of La Salle.	a115	1968-70, 1974-75	10- 2-74 9-29-75	2.53 1.85
05318900	South Fork Watonwan River near Ormsby, Minn.	Lat 43°53'03", long 94°41'09", in NW¼SE¼ sec.21, T.105 N., R.32 W., Watonwan County, at bridge on State Highway 4, 2.5 miles north of Ormsby.	110	1969-71, 1974-75	10- 2-74	.08
05319100	South Fork Watonwan River near Madelia, Minn.	Lat 44°02'33", long 94°27'42", in NE¼SW¼ sec.29, T.107 N., R.30 W., Watonwan County, at bridge on County Highway 116, 0.7 mile upstream from mouth, and 2.3 miles southwest of Madelia.	a185	1968-70, 1974-75	10- 2-74	.73
*05319490	Watonwan River above Garden City, Minn.	Lat 44°01'32", long 94°13'45", in NE¼SE¼ sec.31, T.107 N., R.28 W., Blue Earth County, at bridge on County Highway 20, 3.5 miles southwest of Garden City.	a800	1968-70, 1973-75	10- 2-74	7.76

* Also a crest-stage partial-record station.
a Approximately.
c Estimated.

Discharge measurements made at low-flow partial-record stations during water year 1975--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
		Minnesota River basin--Continued				
05320330	Cobb River near Good Thunder, Minn.	Lat 44°02'50", long 94°00'00", in SE¼NW¼ sec.30, T.107 N., R.26 W., Blue Earth County, at bridge on County Highway 16, 4.5 miles northeast of Good Thunder.	a305	1968-70, 1975	10- 1-74	.26
*05320480	Maple River near Rapidan, Minn.	Lat 44°03'54", long 94°01'32", on line between secs.13 and 24, T.107 N., R.27 W., Blue Earth County, at bridge on County Highway 35, 3 miles southeast of Rapidan.	a310	1968-70, 1972, 1974-75	d11-14-73 d7-17-74 10- 1-74	87.8 41.0 4.38
		St. Croix River basin				
*05336200	Glaisby Brook near Kettle River, Minn.	Lat 46°27'19", long 92°51'34", in SE¼NW¼ sec.22, T.46 N., R.20 W., Carlton County, at bridge on State Highways 27 and 73, 1.0 mile upstream from mouth, and 2.4 miles south of Kettle River.	24.2	1960-70‡, 1971-75	d7-21-71 d4-10-72 d10- 3-72 d4-10-74 8-21-75	3.02 14.6 17.8 8.27 .54
05339750	Goose Creek near Harris, Minn.	Lat 45°36'45", long 92°55'29", in NW¼NE¼ sec.14, T.36 N., R.21 W., Chisago County, at bridge on County Highway 57, 3 miles northeast of Harris.	63.9	1967, 1969, 1974-75	9-30-75	14.9
05339800	Sunrise River near Wyoming, Minn.	Lat 45°19'59", long 92°57'05", in SW¼NW¼ sec.22, T.33 N., R.21 W., Chisago County, at bridge on State Highway 98, 2 miles east of Wyoming.	45.3	1967, 1969-70, 1974-75	9-30-75	15.7
05340170	North Branch Sunrise River near North Branch, Minn.	Lat 45°30'48", long 92°53'36", on line between secs.18 and 19, T.35 N., R.20 W., Chisago County, at bridge on State Highway 95, 4 miles east of North Branch.	b71.8	1967-70, 1974-75	9-30-75	36.9
05340550	Lawrence Creek at Franconia, Minn.	Lat 45°22'16", long 92°41'37", in SE¼SE¼ sec.3, T.33 N., R.19 W., Chisago County, at bridge on county road, 1.0 mile upstream from mouth at Franconia.	16.2	1969-70, 1974-75	9-30-75	2.31
05341550	Browns Creek at Stillwater, Minn.	Lat 45°04'35", long 92°48'21", in NE¼NE¼ sec.21, T.30 N., R.20 W., Washington County, at culvert on State Highway 95, 0.1 mile upstream from mouth at Stillwater.	30.8	1969, 1974-75	9-29-75	4.40
05341790	St. Croix River tributary at Afton, Minn.	Lat 44°53'49", long 92°46'59", in NE¼SE¼ sec.22, T.28 N., R.20 W., Washington County, at bridge on County Highway 21, 0.2 mile upstream from mouth at Afton.	2.49	1969, 1974-75	9-29-75	.48
05341810	Trout Brook near Afton, Minn.	Lat 44°51'49", long 92°48'04", in SW¼SW¼ sec.34, T.28 N., R.20 W., Washington County, at bridge on County Highway 21, 1.9 miles upstream from mouth, and 2.9 miles southwest of Afton.	5.90	1969, 1974-75	9-29-75	.58
		Zumbro River basin				
*05372950	Silver Creek at Rochester, Minn.	Lat 44°01'44", long 92°25'44", in SW¼NE¼ sec.31, T.107 N., R.13 W., Olmsted County, at bridge on county road at east edge of Rochester, 1.7 miles upstream from mouth.	17.3	1968-75	4-18-75	21.6
05373130	North Branch Middle Fork Zumbro River at Pine Island, Minn.	Lat 44°12'10", long 92°38'45", in SW¼NW¼ sec.32, T.109 N., R.15 W., Goodhue County, at bridge on Main Street in Pine Island, and 0.3 mile upstream from Middle Fork Zumbro River.	58.6	1970-71, 1974-75	11-25-74	4.92

* Also a crest-stage partial-record station.
‡ Operated as a continuous-record station.
a Approximately.
b Revised.
d Not previously published.

Discharge measurements made at low-flow partial-record stations during water year 1975--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
		Root River basin				
*05384120	South Branch Root River at Lanesboro, Minn.	Lat 43°43'19", long 91°58'43", in NW¼SE¼ sec.13, T.103 N., R.10 W., Fillmore County, at West Coffe Street bridge leading to ball park in Lanesboro, 2.5 miles upstream from mouth.	a297	1915, 1940-42, 1967, 1971, 1973-75	5-20-75 8-12-75	274 128
		Des Moines River basin				
05474770	Beaver Creek near Currie, Minn.	Lat 44°03'30", long 95°43'08", in NW¼SW¼ sec.24, T.107 N., R.41 W., Murray County, at bridge on county road, 2.8 miles southwest of Currie.	177	1969-70, 1972-75	9-30-75	.46
05474920	Okabena Creek at Okabena, Minn.	Lat 43°44'38", long 95°18'54", on line between secs.7 and 8, T.103 N., R.37 W., Jackson County, at bridge on County Highway 9, 0.3 mile north of Okabena.	141	1969-70, 1973-75	9-30-75	9.90
05475000	Heron Lake Outlet near Heron Lake, Minn.	Lat 43°48'10", long 95°16'30", on line between secs.21 and 22, T.104 N., R.37 W., Jackson County, 0.5 mile downstream from outlet dam, 2 miles east of Heron Lake, and 12 miles upstream from Des Moines River.	457	1930-43‡, 1973, 1975	9-30-75	1.16
05476990	East Fork Des Moines River near Ceylon, Minn.	Lat 43°34'08", long 94°38'04", on line between secs.11 and 12, T.101 N., R.32 W., Martin County, at bridge on County Highway 67, 2.4 miles north of Ceylon.	a155	1971, 1973-75	9-30-75	0
		Big Sioux River basin				
06480600	Flandreau Creek near Cazenovia, Minn.	Lat 44°04'54", long 96°26'27", in NE¼NW¼ sec.13, T.107 N., R.47 W., Pipestone County, at bridge on County Highway 13, 3.5 miles northwest of Cazenovia.	92.2	1971, 1973-75	9-29-75	1.88
06482520	Pipestone Creek near Pipestone, Minn.	Lat 43°58'49", long 96°26'08", on line between secs.13 and 24, T.106 N., R.47 W., Pipestone County, at bridge on County Highway 55, 6.1 miles southwest of Pipestone.	113	1971, 1973-75	9-29-75	2.29
06482540	Split Rock Creek near Jasper, Minn.	Lat 43°46'36", long 96°26'13", on line between secs.26 and 35, T.104 N., R.47 W., Rock County, at bridge on county road, 5.4 miles southwest of Jasper.	310	1969-70, 1973-75	9-29-75	4.79
06482930	Rock River at Edgerton, Minn.	Lat 43°52'14", long 96°08'27", in SW¼NW¼ sec.28, T.105 N., R.44 W., Pipestone County, at bridge on County Highway 10, at west edge of Edgerton, and 1.7 miles upstream from Chanarambie Creek.	121	1969-70, 1973-75	9-29-75	3.80
06482935	Chanarambie Creek at Edgerton, Minn.	Lat 43°52'14", long 96°07'23", in NW¼SW¼ sec.27, T.105 N., R.44 W., Pipestone County, at bridge on County Highway 1, at Edgerton, and 1 mile upstream from mouth.	72.0	1969-70, 1973-75	9-29-75	.58
06482945	Rock River near Hardwick, Minn.	Lat 43°43'04", long 96°09'51", on line between secs.18 and 19, T.103 N., R.44 W., Rock County, at bridge on County Highway 8, 4.3 miles southeast of Hardwick.	312	1969-70, 1973-75	9-29-75	6.80
*06483000	Rock River at Luverne, Minn.	Lat 43°39'15", long 96°12'03", in SW¼NE¼ sec.11, T.102 N., R.45 W., Rock County, at bridge on Main Street (County Highway 4) in Luverne.	425	1911-14‡, 1968, 1970-75	10-30-74 9- 8-75 9-29-75	12.2 8.27 11.3
06483240	Kanaranzi Creek near Kanaranzi, Minn.	Lat 43°30'01", long 96°07'12", on line between sec.4, T.100 N., R.44 W., and sec.33, T.101 N., R.44 W., Rock County, at bridge on county road on Iowa-Minnesota border, 5.3 miles southwest of Kanaranzi.	192	1969-70, 1973-75	9-29-75	3.04

* Also a crest-stage partial-record station.
‡ Operated as a continuous-record station.
a Approximately.

Discharge measurements made at low-flow partial-record stations during water year 1975--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
		Little Sioux River basin				
*06603530	**Little Sioux River near Spafford, Minn.**	Lat 43°36'08", long 95°15'27", in NE¼NE¼ sec.34, T.102 N., R.37 W., Jackson County, at bridge on county road, 1.6 miles downstream from Jackson County ditch No. 11, and 5.8 miles east of Spafford.	41.1	1962-67, 1969-70, 1972-75	7- 2-75	17.8
06603690	**West Fork Little Sioux River near Sioux Valley, Minn.**	Lat 43°30'02", long 95°16'46", in SE¼SE¼ sec.33, T.101 N., R.37 W., Jackson County, at bridge on County Highway 62, 3.3 miles southeast of Sioux Valley.	106	1971, 1973-75	9-30-75	.18

* Also a crest-stage partial-record station.

Crest-stage partial-record stations

The following table contains annual maximum discharge for crest-stage stations. A crest-stage is a device which will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements of peak flow or by current meter. The date of the maximum discharge is not always certain but is usually determined by comparison with nearby continuous-record stations, weather records, or local inquiry. Only the maximum discharge for each water year is given. Information on some lower floods may have been obtained, and discharge measurements may have been made for purposes of establishing the stage-discharge relation, but these are not published herein. The years given in the period of record represent water years for which the annual maximum has been determined.

Annual maximum discharge at crest-stage partial-record stations during water year 1975

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Streams tributary to Lake Superior					
04011370	Little Devil Track River near Grand Marais, Minn.	Lat 47°47'09", long 90°19'44", in NE¼NW¼ sec.9, T.61 N., R.1 E., Cook County, at culvert on County Highway 12, 1.6 miles upstream from mouth, and 2.5 miles north of Grand Marais.	7.49	1961-75	7- 2-75	15.75	56
04011390	Little Devil Track River tributary near Grand Marais, Minn.	Lat 47°47'17", long 90°19'20", in SE¼SE¼ sec.4, T.61 N., R.1 E., Cook County, at culvert on County Highway 55, 0.2 mile upstream from mouth, and 2.8 miles north of Grand Marais.	.47	1966-75	4-23-75	a9.91	3.8
*04012500	Poplar River at Lutsen, Minn.	Lat 47°38'23", long 90°42'31", in SW¼NE¼ sec.33, T.60 N., R.3 W., Cook County, 350 feet upstream from bridge on U.S. Highway 61 at Lutsen, and 0.3 mile upstream from mouth.	114	1912-17‡, 1928-47‡, 1952-61‡, 1972-75	5- 3-75	4.69	640
04013100	Lake Superior tributary near Taconite Harbor, Minn.	Lat 47°29'14", long 90°59'19", in SW¼SE¼ sec.20, T.58 N., R.5 W., Cook County, at culvert on U.S. Highway 61, 0.2 mile upstream from mouth, and 3.7 miles southwest of Taconite Harbor.	1.56	1964-75	4-28-75	7.94	54
04013200	Caribou River near Little Marais, Minn.	Lat 47°27'51", long 91°01'50", in NW¼SE¼ sec.36, T.58 N., R.6 W., Lake County, at culvert on U.S. Highway 61, 0.2 mile upstream from mouth, and 5.2 miles northeast of Little Marais.	22.7	1961-75	4-23-75	12.69	422
04015150	Crow Creek near Silver Creek, Minn.	Lat 47°08'30", long 91°34'38", in SW¼SW¼ sec.23, T.54 N., R.10 W., Lake County, at culvert on County Highway 3, 2.3 miles northeast of Silver Creek, and 4.0 miles upstream from mouth.	1.07	1960-75	4-23-75	b9.00	34
04015200	Encampment River tributary at Silver Creek, Minn.	Lat 47°07'01", long 91°36'04", in NE¼SE¼ sec.33, T.54 N., R.10 W., Lake County, at culvert on County Highway 3, 0.3 mile north of Silver Creek, and 1.4 miles upstream from mouth.	.96	1960-75	4-23-75	a7.79	41
04015250	Silver Creek tributary near Two Harbors, Minn.	Lat 47°04'40", long 91°36'49", in SW¼NE¼ sec.16, T.53 N., R.10 W., Lake County, at culvert on County Highway 3, 1.0 mile upstream from mouth, and 4.5 miles northeast of Two Harbors.	3.72	1965-75	4-24-75	a4.74	(†)
04015300	Little Stewart River near Two Harbors, Minn.	Lat 47°03'52", long 91°40'03", in SE¼NE¼ sec.24, T.53 N., R.11 W., Lake County, at culvert on county highway, 2.0 miles upstream from mouth, and 2.7 miles north of Two Harbors.	5.54	1960-75	4-23-75	a13.33	245
04015360	Lake Superior tributary No. 2 at French River, Minn.	Lat 46°53'43", long 91°54'31", in SW¼SE¼ sec.18, T.51 N., R.12 W., St. Louis County, at culvert on U.S. Highway 61, 0.35 mile upstream from mouth, and 0.7 mile west of French River.	1.41	1964-75	4-27-75	19.17	94
04015370	Talmadge River at Duluth, Minn.	Lat 46°53'20", long 91°55'21", in SE¼NE¼ sec.24, T.51 N., R.13 W., St. Louis County, at culvert on U.S. Highway 61, 0.6 mile upstream from mouth, and 0.5 mile northeast of Duluth city limits.	5.79	1964-75	4-15-73 10- 9-73 4-27-75	a14.11 16.42 14.69	c152 c470 252
04015400	Miller Creek at Duluth, Minn.	Lat 46°49"01", long 92°10'42", in SE¼NE¼ sec.13, T.50 N., R.15 W., St. Louis County, at culvert on U.S. Highway 53, 0.2 mile northwest of Duluth city limits.	4.92	1960-75	4-29-75	15.96	185
04017700	McKinley Lake tributary at McKinley, Minn.	Lat 47°30'41", long 92°25'11", in SW¼NE¼ sec.18, T.58 N., R.16 W., St. Louis County, at culvert on State Highway 135 at west edge of McKinley.	.37	1960-75	4-29-75	7.49	5.2

* Also a low-flow partial-record station.
† Discharge not determined.
‡ Operated as a continuous-record gaging station.
a Backwater from ice.
b Affected by shifting control.
c Revised.

Annual maximum discharge at crest-stage partial-record stations during water year 1975--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Streams tributary to Lake Superior--Continued					
04021205	Floodwood River above Floodwood, Minn. (Formerly published as Floodwood River near Floodwood)	Lat 46°17'15", long 92°53'40", in NE¼NW¼ sec.32, T.52 N., R.20 W., St. Louis County, at bridge on County Highway 835, 500 feet west of State Highway 73, and 2 miles north of Floodwood.	-	1972-75	5- 1-75	19.91	2,030
*04024095	Nemadji River near Holyoke, Minn.	Lat 46°31'04", long 92°23'22", in NE¼NE¼ sec.32, T.47 N., R.16 W., Carlton County, at bridge on State Highway 23, 3.5 miles north of Holyoke.	118	1972-75	9-20-72 3-11-73 6- 9-74 4-23-75	15.31 a11.25 12.55 12.20	3,250 1,270 2,000 1,850
04024100	Rock Creek near Blackhoof, Minn.	Lat 46°32'10", long 92°22'12", in SW¼SE¼ sec.21, T.47 N., R.16 W., Carlton County, at culvert on State Highway 23, 4.0 miles upstream from mouth, and 4.4 miles east of Blackhoof.	4.94	1961-65, 1967-75	4-16-75	a14.32	130
04024110	Rock Creek tributary near Blackhoof, Minn.	Lat 46°32'14", long 92°22'05", in NE¼SE¼ sec.21, T.47 N., R.16 W., Carlton County, at culvert on State Highway 23, 0.1 mile upstream from mouth, and 4.5 miles east of Blackhoof.	.20	1961-75	4-16-75	a10.10	9.4
04024200	South Fork Nemadji River near Holyoke, Minn.	Lat 46°29'38", long 92°24'36", in SE¼SE¼ sec.6, T.46 N., R.16 W., Carlton County, at culvert on State Highway 23, 1.7 miles downstream from Clear Creek, and 2.0 miles northwest of Holyoke.	19.4	1961-75	6-29-75	13.40	890
		Red River of the North basin					
05047700	West Branch Mustinka River tributary near Graceville, Minn.	Lat 45°36'53", long 96°19'47", in NE¼NW¼ sec.28, T.125 N., R.45 W., Traverse County, at culvert on county highway, 6.0 mile northeast of Graceville.	3.37	1964-75	6-14-75	7.55	36
05049200	Eighteenmile Creek near Wheaton, Minn.	Lat 45°47'18", long 96°31'52", on west quarter of line between secs.24 and 25, T.127 N., R.47 W., Traverse County, at culvert on County Highway 67, 1.4 miles upstream from mouth, and 2.0 miles southwest of Wheaton.	68.5	1965-68, 1970-75	4-16-75	a8.82	(†)
05060800	Buffalo River near Callaway, Minn.	Lat 47°01'17", long 95°54'43", in SW¼SW¼ sec.17, T.141 N., R.41 W., Becker County, at culvert on U.S. Highway 59, 2.7 miles north of Callaway.	94.5	1960-75	6-29-75	15.68	620
*05061200	Whisky Creek at Barnesville, Minn.	Lat 46°39'35", long 96°23'54", in SE¼SW¼ sec.20, T.137 N., R.45 W., Clay County, at culvert on State Highway 34, 0.7 mile upstream from Blue Eagle Lake, and 1.0 mile northeast of Barnesville.	25.3	1961-64, 1965-66‡, 1967-75	6-29-75	6.97	610
05061400	Hay Creek above Downer, Minn.	Lat 46°44'37", long 96°25'12", in NW¼NW¼ sec.30, T.138 N., R.45 W., Clay County, at culvert on county road, 3.1 miles east of Downer.	5.81	1961-75	6- 8-62 6-29-75	13.46 13.52	c860 1,460
05062280	Mosquito Creek near Bagley, Minn.	Lat 47°27'02", long 95°22'55", in SW¼NW¼ sec.21, T.146 N., R.37 W., Clearwater County, at culvert on State Highway 92, 5.0 miles south of Bagley.	3.98	1961-75	4-17-75	a10.53	71
05062470	Marsh Creek tributary near Mahnomen, Minn.	Lat 47°19'31", long 96°04'41", in SE¼SW¼ sec.36, T.145 N., R.43 W., Norman County, at culvert on State Highway 31, 0.1 mile upstream from mouth, and 5.2 miles west of Mahnomen.	11.9	1961-75	7- 2-75	10.47	119
05062700	Wild Rice River tributary near Twin Valley, Minn.	Lat 47°17'47", long 96°19'42", in SW¼SE¼ sec.12, T.144 N., R.45 W., Norman County, at culvert on State Highway 31, 1.2 miles upstream from mouth, and 4.1 miles northwest of Twin Valley.	c4.72	1961-75	7- 2-75	b12.39	90
05062800	Coon Creek near Twin Valley, Minn.	Lat 47°15'51", long 96°20'34", in NE¼NE¼ sec.26, T.144 N., R.45 W., Norman County, at bridge on County Highway 28, 1.3 miles upstream from mouth, and 4.0 miles west of Twin Valley.	50.8	1962-75	6-29-75	14.59	2,700
05063200	Spring Creek tributary near Ogema, Minn.	Lat 47°07'22", long 95°57'35", in SE¼SE¼ sec.11, T.142 N., R.42 W., Becker County, at culvert on county highway, 2.0 miles northwest of Ogema.	4.99	1963-75	6-29-75	8.44	101

* Also a low-flow partial-record station.
† Discharge not determined.
‡ Operated as a continuous-record gaging station.
a Backwater from ice.
b Affected by shifting control.
c Revised.

Annual maximum discharge at crest-stage partial-record stations during water year 1975--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Red River of the North basin--Continued					
*05063500	South Branch Wild Rice River near Borup, Minn.	Lat 47°11'40", long 96°34'40", in NW¼NW¼ sec.24, T.143 N., R.47 W., Norman County, at bridge on County Highway 193, 4 miles northwest of Borup.	254	1944-49‡, 1972-75	7- 1-75	20.59	3,700
05073600	South Branch Battle River at Northome, Minn.	Lat 47°52'17", long 94°17'45", in NW¼NE¼ sec.25, T.151 N., R.29 W., Koochiching County, at culvert on U.S. Highway 71, 0.7 mile west of Northome, and 3.1 miles upstream from Battle Lake.	2.80	1960-75	7- 2-75	15.09	126
05073750	Spring Creek near Blackduck, Minn.	Lat 47°46'23", long 94°31'22", in NW¼NW¼ sec.32, T.150 N., R.30 W., Beltrami County, at culvert on County Highway 304, 3.1 miles north of Blackduck, and 3.2 miles upstream from mouth.	7.96	1960-75	7- 2-75	16.85	896
05073800	Perry Creek tributary near Shooks, Minn.	Lat 47°52'00", long 94°32'52", in NW¼SW¼ sec.30, T.151 N., R.30 W., Beltrami County, at culvert on State Highway 72, 5.2 miles west of Shooks.	1.14	1960-75	7- 2-75	9.91	140
05076600	Red Lake River tributary near Thief River Falls, Minn.	Lat 48°04'44", long 96°12'15", in SW¼SE¼ sec.8, T.153 N., R.43 W., Pennington County, at culvert on County Highway 7, 0.5 mile upstream from mouth, and 3.1 miles south of Thief River Falls.	2.33	1962-75	4-18-75	6.55	52
05078180	Silver Creek near Clearbrook, Minn.	Lat 47°38'43", long 95°26'33", in NW¼ sec.13, T.148 N., R.38 W., Clearwater County, at culvert on county highway, 3.4 miles south of Clearbrook.	4.96	1960-75	4-17-75	a11.89	(†)
05078200	Silver Creek tributary at Clearbrook, Minn.	Lat 47°41'49", long 95°25'50", in SW¼NW¼ sec.29, T.149 N., R.37 W., Clearwater County, at culvert on county highway, at north edge of Clearbrook, 0.9 mile upstream from mouth.	6.02	1960-75	4-17-75	b11.90	69
05078400	Clearwater River tributary near Plummer, Minn.	Lat 47°52'34", long 96°08'35", in SE¼SE¼ sec.22, T.151 N., R.43 W., Red Lake County, at culvert on county highway, 1.2 miles upstream from mouth, and 5.3 miles southwest of Plummer.	c6.51	1961-75	4-28-75	11.54	(†)
		Lake of the Woods basin					
05128300	Pike River near Gilbert, Minn.	Lat 47°29'34", long 92°29'15", in NE¼SW¼ sec.22, T.58 N., R.17 W., St. Louis County, at culvert on State Highway 135, 1.1 miles west of Gilbert.	.73	1966-75	7- 2-75	7.29	16
05128700	Pike River tributary near Wahlsten, Minn.	Lat 47°43'04", long 92°17'12", in SW¼SW¼ sec.32, T.61 N., R.15 W., St. Louis County, at culvert on State Highway 135, 1.2 miles south of Wahlsten, and 2.7 miles upstream from mouth.	1.93	1961-75	4-27-75	a8.34	92
05129710	Johnson Creek near Britt, Minn.	Lat 47°39'40", long 92°38'03", in NW¼NE¼ sec.28, T.60 N., R.18 W., St. Louis County, at culvert adjacent to U.S. Highway 53, 0.6 mile downstream from Sand Lake, and 5.9 miles west of Britt.	6.92	1961-64, 1966-75	4-30-75	8.19	32
05130300	Boriin Creek near Chisholm, Minn.	Lat 47°36'14", long 92°51'58", in SE¼SE¼ sec.9, T.59 N., R.20 W., St. Louis County, at culvert on State Highway 73, 1.2 miles upstream from mouth, and 7.8 miles north of Chisholm.	13.7	1959-75	4-29-75	12.49	284
*05131750	Big Fork River near Bigfork, Minn.	Lat 47°45'05", long 93°46'33", in SE¼NE¼ sec.27, T.61 N., R.27 W., Itasca County, at bridge on State Highway 6, 5.5 miles west of Bigfork.	-	1973-75	4-29-75	13.97	2,030
		Mississippi River main stem					
*05200445	Mississippi River at Bemidji, Minn.	Lat 47°27'04", long 94°54'23", in NW¼NW¼ sec.20, T.146 N., R.33 W., Beltrami County, at bridge on County Highway 11, 1.5 miles southwest of intersection of U.S. Highway 2 and County Highway 7 in Bemidji.	-	1973-75	4-22-75	12.46	1,170

* Also a low-flow partial-record station.
† Discharge not determined.
‡ Operated as a continuous-record gaging station.
a Backwater from ice.
b Affected by shifting control.
c Revised.

Annual maximum discharge at crest-stage partial-record stations during water year 1975--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum Date	Annual maximum Gage height (feet)	Annual maximum Discharge (cfs)
		Smith Creek basin					
05210200	Smith Creek near Hill City, Minn.	Lat 47°04'58", long 93°34'59", in SE¼NW¼ sec.13, T.53 N., R.26 W., Itasca County, at culvert on U.S. Highway 169, 6.2 miles north of Hill City.	8.00	1961-75	4-27-75	b5.90	108
		Swan River basin					
05216980	Swan River tributary at Warba, Minn.	Lat 47°07'11", long 93°15'00", in SE¼NW¼ sec.34, T.54 N., R.23 W., Itasca County, at culvert on U.S. Highway 2, 0.9 mile upstream from mouth, and 1.1 miles southeast of Warba.	3.95	1961-75	4-27-75	6.18	51
		Bluff Creek basin					
05217700	Bluff Creek near Jacobson, Minn.	Lat 47°00'19", long 93°17'30", in SW¼NW¼ sec.8, T.52 N., R.23 W., Aitkin County, at culvert on State Highway 200, 1.2 miles west of Jacobson.	1.50	1961-75	4-27-75	8.69	73
		Willow River basin					
*05221020	Willow River below Palisade, Minn.	Lat 46°42'38", long 93°33'21", in NW¼NE¼ sec.30, T.49 N., R.25 W., Aitkin County, at bridge on County Highway 3, 3.2 miles west of Palisade.	-	1972-75	5- 1-75	17.21	3,700
		Crow Wing River basin					
05244100	Kitten Creek near Sebeka, Minn.	Lat 46°40'33", long 95°04'46", in SE¼SE¼ sec.15, T.137 N., R.35 W., Wadena County, at culvert on county highway, 3.2 miles north of Sebeka, and 3.3 miles upstream from mouth.	14.7	1961-75	4-20-75	10.25	160
05244200	Cat River near Nimrod, Minn.	Lat 46°37'49", long 94°55'51", in SW¼SW¼ sec.36, T.137 N., R.34 W., Wadena County, at bridge on State Highway 227, 2.5 miles west of Nimrod, and 3.0 miles upstream from mouth.	49.2	1961-75	4-20-75	7.43	305
*05244440	Leaf River near Aldrich, Minn.	Lat 46°27'25", long 94°50'29", in SW¼SW¼ sec.34, T.135 N., R.33 W., Wadena County, at bridge on County Highway 29, 2.3 miles upstream from mouth, and 7 miles northeast of Aldrich.	-	1972-75	4-21-75	15.44	3,950
		Mississippi River main stem					
*05261000	Mississippi River near Fort Ripley, Minn.	Lat 46°10'50", long 94°21'56", in SE¼NW¼ sec.27, T.43 N., R.32 W., Crow Wing County, on left bank 600 ft upstream from Nokasippi River, and 1.0 mile north of Fort Ripley.	11,010	1929‡, 1972-75	4-28-75	1146.53	24,800
		Platte River basin					
05267800	Big Mink Creek tributary near Lastrup, Minn.	Lat 46°01'58", long 94°06'13", in NW¼SE¼ sec.14, T.41 N., R.30 W., Morrison County, at culvert on State Highway 25, 1.4 miles upstream from mouth, and 2.1 miles west of Lastrup.	1.53	1961-75	4-20-75	9.33	14
*05267900	Hillman Creek near Pierz, Minn.	Lat 45°58'27", long 94°04'21", in NE¼SE¼ sec.9, T.40 N., R.30 W., Morrison County, at bridge on county highway, 1.1 miles upstream from mouth, and 1.5 miles east of Pierz.	46.7	1964-75	4-27-75	14.11	840
*05268000	Platte River above Royalton, Minn.	Lat 45°50'43", long 94°17'40", in SE¼NW¼ sec.26, T.39 N., R.31 W., Morrison County, at bridge on County Highway 27, 0.6 mile north of Royalton, and 6.6 miles upstream from mouth.	335	1929-36‡, 1972-75	4-28-75	4.26	2,710
		Sauk River basin					
05270300	Sauk River tributary at Spring Hill, Minn.	Lat 45°31'22", long 94°48'31", in SW¼NE¼ sec.27, T.124 N., R.33 W., Stearns County, at culvert on State Highway 4, 1.0 mile east of Spring Hill, and 2.7 miles upstream from mouth.	7.06	1960-75	4-27-75	10.77	153

* Also a low-flow partial-record station.
‡ Operated as a continuous-record gaging station.
b Affected by shifting control.

Annual maximum discharge at crest-stage partial-record stations during water year 1975--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Sauk River basin--Continued					
05270310	Sauk River tributary No. 2 near St. Martin, Minn.	Lat 45°31'44", long 94°44'50", in SE¼SE¼ sec.19, T.124 N., R.32 W., Stearns County, at culvert on county highway, 4.2 miles northwest of St. Martin.	.24	1960, 1962-75	6-21-75	7.37	11
		Johnson Creek basin					
05271800	Johnson Creek tributary at Luxemburg, Minn.	Lat 45°26'30", long 94°14'46", in NW¼NE¼ sec.30, T.123 N., R.28 W., Stearns County, at culverts on State Highway 15, 0.8 mile south of Luxemburg.	3.82	1964-75	4-27-75	7.43	35
05272000	Johnson Creek tributary No. 2 near St. Augusta, Minn.	Lat 45°26'52", long 94°12'00", in NE¼SE¼ sec.21, T.123 N., R.28 W., Stearns County, at culverts on county highway, 0.7 mile upstream from mouth, and 3.1 miles southwest of St. Augusta.	13.4	1964-75	4-27-75	9.12	(†)
*05272300	Johnson Creek near St. Augusta, Minn.	Lat 45°27'49", long 94°09'19", in NW¼SW¼ sec.13, T.123 N., R.28 W., Stearns County, at bridge on County Highway 7, 1.0 mile south of St. Augusta, and 3.3 miles upstream from mouth.	46.7	1964-75	4-27-75	14.10	495
		Mississippi River main stem					
05273510	Mississippi River at Clearwater, Minn.	Lat 45°25'15", long 94°02'37", in NW¼SW¼ sec.23, T.34 N., R.30 W., Sherburne County, on left bank 700 feet upstream from bridge, on State Highway 24 at Clearwater.	-	1972-75	4-30-75	19.28	35,600
		Otsego Creek basin					
05273700	Otsego Creek near Otsego, Minn.	Lat 45°17'19", long 93°38'59", in SW¼NE¼ sec.13, T.121 N., R.24 W., Wright County, at culvert on County Highway 39, 1.3 miles upstream from mouth, and 1.9 miles west of Otsego.	3.11	1964-75	6-27-75	5.59	154
		Elk River basin					
05274200	Stony Brook tributary near Foley, Minn.	Lat 45°38'42", long 93°54'54", in NE¼NW¼ sec.2, T.36 N., R.29 W., Benton County, at culvert on State Highway 25, 0.3 mile upstream from mouth, and 1.5 miles south of Foley.	2.26	1960-75	4-27-75	8.72	52
		Crow River basin					
05276100	North Fork Crow River tributary near Paynesville, Minn.	Lat 45°23'29", long 94°46'56", in SW¼NW¼ sec.12, T.122 N., R.33 W., Kandiyohi County, at culvert on county highway, 1.2 miles upstream from mouth, and 3.0 miles west of Paynesville.	.55	1960-75	4-27-75	17.33	21
05276200	North Fork Crow River at Paynesville, Minn.	Lat 45°23'09", long 94°42'41", in SW¼SE¼ sec.9, T.122 N., R.32 W., Stearns County, at bridge on county road at northeast edge of Paynesville city limits.	-	1973-75	4-28-75	6.47	(†)
05278350	Fountain Creek near Montrose, Minn.	Lat 45°01'20", long 93°56'29", in NE¼NW¼ sec.22, T.118 N., R.26 W., Wright County, at culvert on County Highway 30, 3.3 miles southwest of Montrose.	6.73	1962-75	4-23-75	5.88	47
05278700	Otter Creek near Lester Prairie, Minn.	Lat 44°54'23", long 94°04'24", in SE¼SE¼ sec.28, T.117 N., R.27 W., McLeod County, at culvert on State Highway 7, 2.1 miles northwest of Lester Prarie, and 4.4 miles upstream from mouth.	30.2	1961-75	4-23-75	8.08	169
05278750	Otter Creek tributary near Lester Prairie, Minn.	Lat 44°53'34", long 94°04'24", in SE¼SE¼ sec.33, T.117 N., R.27 W., McLeod County, at culvert on County Highway 63, 1.7 miles northwest of Lester Prairie, and 3.3 miles upstream from mouth.	1.54	1962-75	4-28-75	8.40	31
05278850	Buffalo Creek tributary near Brownton, Minn.	Lat 44°45'55", long 94°22'33", in NE¼SE¼ sec.13, T.115 N., R.30 W., McLeod County, at culvert on State Highway 15, 0.6 mile upstream from mouth, and 2.6 miles northwest of Brownton.	9.45	1961-75	4-28-75	14.33	55

* Also a low-flow partial-record station.
† Discharge not determined.

Annual maximum discharge at crest-stage partial-record stations during water year 1975--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum Date	Annual maximum Gage height (feet)	Annual maximum Discharge (cfs)
		Crow River basin--Continued					
05280300	School Lake Creek tributary near St. Michael, Minn.	Lat 45°12'09", long 93°41'31", in NW¼SE¼ sec.15, T.120 N., R.24 W., Wright County, at culvert on county highway, 0.2 mile upstream from mouth, and 1.5 miles southwest of St. Michael.	2.04	1964-75	6-27-75	11.92	135
		Rum River basin					
05284600	Robinson Brook near Onamia, Minn.	Lat 45°58'22", long 93°39'42", in NE¼SE¼ sec.11, T.40 N., R.27 W., Mille Lacs County, at culvert on U.S. Highway 169, 0.2 mile upstream from mouth, and 6.8 miles south of Onamia.	4.79	1960-75	4-27-75	16.12	186
05284620	Rum River tributary near Onamia, Minn.	Lat 45°57'29", long 93°39'43", in NE¼SE¼ sec.14, T.40 N., R.27 W., Mille Lacs County, at culvert on U.S. Highway 169, 0.3 mile upstream from mouth, and 7.8 miles south of Onamia.	2.37	1960-75	7- 2-75	10.77	107
05284920	Stanchfield Creek tributary near Day, Minn.	Lat 45°41'29", long 93°23'45", in NW¼SE¼ sec.13, T.37 N., R.25 W., Isanti County, at culvert on County Highway 60, 0.5 mile upstream from mouth, and 1.5 miles southwest of Day.	1.26	1961-75	7- 2-75	8.25	99
		Minnesota River basin					
05299100	Lazarus Creek tributary near Canby, Minn.	Lat 44°43'04", long 96°19'42", in NE¼NW¼ sec.6, T.114 N., R.45 W., Yellow Medicine County, at culvert on State Highway 68, 2.7 miles west of Canby, and 4.2 miles upstream from mouth.	2.97	1960-75	4-13-75	a12.19	74
05301200	Minnesota River tributary near Montevideo, Minn.	Lat 44°56'08", long 95°48'12", in SW¼SE¼ sec.16, T.117 N., R.41 W., Lac qui Parle County, at culvert on U.S. Highway 212, 0.1 mile upstream from mouth, and 4.0 miles west of Montevideo.	.40	1960-75	4-26-75	7.43	3.5
05302970	Outlet Creek tributary near Starbuck, Minn.	Lat 45°31'35", long 95°33'43", in NW¼NW¼ sec.27, T.124 N., R.39 W., Pope County, at culvert on State Highway 29, 0.2 mile upstream from mouth, and 6.6 miles south of Starbuck.	c.47	1962-75	6-24-75	8.32	22
05303450	Hassel Creek near Clontarf, Minn.	Lat 45°24'03", long 95°34'13", in SW¼SE¼ sec.4, T.122 N., R.39 W., Swift County, at culvert on State Highway 29, 0.2 mile upstream from Lake Hassel, and 5.6 miles east of Clontarf.	7.53	1962-75	4-28-75	7.83	35
*05305200	Spring Creek near Montevideo, Minn.	Lat 44°58'41", long 95°42'57", in NW¼NW¼ sec.5, T.117 N., R.40 W., Chippewa County, at culvert on State Highway 29, 1.2 miles upstream from mouth, and 2.0 miles north of Montevideo.	16.0	1959-75	4-26-75	13.07	40
05311200	North Branch Yellow Medicine River near Ivanhoe, Minn.	Lat 44°27'32", long 96°21'27", in NE¼NW¼ sec.2, T.111 N., R.46 W., Lincoln County, at culvert on State Highway 19, 5.3 miles west of Ivanhoe.	14.8	1960-75	4-13-75	a13.12	17
05311250	North Branch Yellow Medicine River tributary near Wilno, Minn.	Lat 44°33'12", long 96°16'33", in SE¼NE¼ sec.33, T.113 N., R.45 W., Lincoln County, at culvert on U.S. Highway 75, 2.1 miles upstream from mouth, and 4.3 miles northwest of Wilno.	.33	1960-75	4-13-75	a8.59	13
05311300	North Branch Yellow Medicine River tributary No. 2 near Porter, Minn.	Lat 44°35'39", long 96°16'34", in SE¼NE¼ sec.16, T.113 N., R.45 W., Lincoln County, at culvert on U.S. Highway 75, 6.2 miles southwest of Porter.	3.70	1960-75	4-13-75	a15.54	74
05314900	Redwood River at Ruthton, Minn.	Lat 44°10'53", long 96°06'07", in NW¼NW¼ sec.11, T.108 N., R.44 W., Pipestone County, at culvert on State Highway 23, 0.3 mile north of Ruthton.	c6.18	1959-75	4-13-75	a14.92	38
*05315200	Prairie Ravine near Marshall, Minn.	Lat 44°29'44", long 95°47'48", in SE¼NE¼ sec.20, T.112 N., R.41 W., Lyon County, at culvert on U.S. Highway 59, 2.7 miles north of Marshall.	5.63	1959-64‡, 1965-75	4-13-75	a6.42	19
05316550	West Fork Beaver Creek near Olivia, Minn.	Lat 44°50'56", long 95°01'53", in SE¼SW¼ sec.14, T.116 N., R.35 W., Renville County, at culvert on field road, 0.25 mile upstream from U.S. Highway 71, and 5.5 miles northwest of Olivia.	12.2	1959-75	4-26-75	a7.49	74

* Also a low-flow partial-record station.
‡ Operated as a continuous-record gaging station.
a Backwater from ice.
c Revised.

Annual maximum discharge at crest-stage partial-record stations during water year 1975--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum Date	Gage height (feet)	Discharge (cfs)
		Minnesota River basin--Continued					
*05316570	Beaver Creek at Beaver Falls, Minn.	Lat 44°35'10", long 95°02'49", in NE¼NW¼ sec.22, T.113 N., R.35 W., Renville County, at bridge in Beaver Falls, 2.2 miles upstream from mouth, and 3.8 miles northwest of Morton.	194	1972-75	4-23-75	a10.02	675
05316690	Spring Creek tributary near Sleepy Eye, Minn.	Lat 44°23'54", long 94°45'35", in NW¼ sec.25, T.111 N., R.33 W., Brown County, at culvert on county highway, 0.1 mile upstream from mouth, and 7.5 miles north of Sleepy Eye.	3.69	1966-75	4-23-75	a6.31	49
05316700	Spring Creek near Sleepy Eye, Minn.	Lat 44°24'12", long 94°44'41", in NE¼SE¼ sec.24, T.111 N., R.33 W., Brown County, at culvert on county highway, 4.3 miles upstream from mouth, and 7.5 miles north of Sleepy Eye.	31.3	1959-75	4-24-75	a11.91	200
05316800	Cottonwood River tributary near Balaton, Minn.	Lat 44°14'24", long 95°57'22", in NW¼NW¼ sec.19, T.109 N., R.42 W., Lyon County, at culvert on U.S. Highway 14, 4.0 miles west of Balaton.	.91	1959-75	3-14-61 3-23-66 6- 7-67 6-26-68 4-13-75	5.24 5.31 5.37 4.89 a6.90	c8.2 c12 c16 c1.3 19
05316900	Dry Creek near Jeffers, Minn.	Lat 44°07'21", long 95°12'13", in NE¼NE¼ sec.31, T.108 N., R.36 W., Cottonwood County, at culvert on County Highway 10, 4.5 miles north of Jeffers.	3.13	1961-75	4-13-75	a7.34	71
05316920	Cottonwood River tributary No. 2 near Sanborn, Minn.	Lat 44°10'34", long 95°07'15", in SW¼NW¼ sec.12, T.108 N., R.36 W., Cottonwood County, at culvert on U.S. Highway 71, 2.4 miles south of Sanborn.	.42	1966-75	4-23-75	4.11	14
05316950	Cottonwood River near Springfield, Minn.	Lat 44°12'12", long 95°02'53", on line between sec.33 and 34, T.109 N., R.35 W., Brown County, at bridge on County Highway 2, 1.3 miles downstream from Mound Creek, 1.0 mile upstream from Coal Mine Creek, and 3.5 miles southwest of Springfield.	-	1973-75	4-23-75	a21.11	3,050
05317190	Little Cottonwood River at Searles, Minn.	Lat 44°14'19", long 94°26'04", in NE¼NE¼ sec.21, T.109 N., R.30 W., Brown County, at bridge on State Highway 15, 0.75 mile north of Searles, and 3 miles south of New Ulm.	-	1972-75	4-24-75	(d)	e700
05317850	Foster Creek near Alden, Minn.	Lat 43°39'31", long 93°35'30", in NE¼NE¼ sec.9, T.102 N., R.23 W., Freeborn County, at culvert on U.S. Highway 16, 1.2 miles southwest of Alden.	2.26	1959-75	6-30-75	7.40	169
05318000	East Branch Blue Earth River near Bricelyn, Minn.	Lat 43°37'50", long 93°47'25", in NE¼NE¼ sec.23, T.102 N., R.25 W., Faribault County, at bridge on county highway, 2 miles upstream from Brush Creek, 3 miles downstream from South Walnut Lake, and 5 miles northeast of Bricelyn.	132	1973-75	5-29-75	b9.94	690
05318100	East Branch Blue Earth River tributary near Blue Earth, Minn.	Lat 43°37'09", long 94°01'03", in SW¼SE¼ sec.24, T.102 N., R.27 W., Faribault County, at culvert on County Highway 13, 0.5 mile upstream from mouth, and 4.3 miles east of Blue Earth.	9.20	1960-75	6- 4-75	b5.51	138
05318300	Watonwan River near Delft, Minn.	Lat 43°59'55", long 95°07'11", in NE¼SE¼ sec.11, T.106 N., R.36 W., Cottonwood County, at culvert on U.S. Highway 71, 1.7 miles northwest of Delft.	13.0	1960-75	4-23-75	b15.09	54
*05319490	Watonwan River above Garden City, Minn.	Lat 44°01'32", long 94°13'45", in NE¼SE¼ sec.31, T.107 N., R.28 W., Blue Earth County, at bridge on County Highway 20, 3.5 miles southeast of Garden City.	-	1972-75	4-29-75	(d)	e3,100
05320200	Le Sueur River tributary near Mankato, Minn.	Lat 44°07'29", long 93°57'33", in SE¼SW¼ sec.28, T.108 N., R.26 W., Blue Earth County, at culvert on State Highway 22, 0.2 mile upstream from mouth, and 1.5 miles southeast of Mankato Airport.	.073	1959-75	4-28-75	19.62	10
05320300	Cobb River tributary near Mapleton, Minn.	Lat 44°01'05", long 93°57'30", in SW¼NE¼ sec.4, T.106 N., R.26 W., Blue Earth County, at culvert on State Highway 22, 1.0 mile upstream from mouth, and 6.3 miles north of Mapleton.	7.25	1959-75	6-15-75	15.34	109

* Also a low-flow partial-record station.
a Backwater from ice.
b Affected by shifting control.
c Revised.
d Peak stage did not reach bottom of gage.
e Estimated; gage height unknown.

Annual maximum discharge at crest-stage partial-record stations during water year 1975--Continued

					Annual maximum		
Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Date	Gage height (feet)	Discharge (cfs)
		Minnesota River basin--Continued					
05320400	Maple River tributary near Mapleton, Minn.	Lat 43°55'18", long 94°01'17", in SE¼SW¼ sec.1, T.105 N., R.27 W., Blue Earth County, at culvert on State Highway 30, 0.9 mile upstream from mouth, and 3.3 miles west of Mapleton.	6.22	1959-75	6-15-75	18.28	189
*05320480	Maple River near Rapidan, Minn.	Lat 44°03'54", long 94°01'32", in SW¼ sec.13, T.107 N., R.27 W., Blue Earth County, at bridge on County Highway 35, 3.0 miles southeast of Rapidan, and 3.3 miles upstream from mouth.		1972-75	4-29-75	(d)	e1,300
05330150	Sand Creek tributary near Montgomery, Minn.	Lat 44°25'41", long 93°30'31", in NE¼NE¼ sec.18, T.111 N., R.22 W., Rice County, at culvert on State Highway 21, 3.5 miles east of Montgomery.	.36	1961-75	4-28-75	8.88	29
05330200	Rice Lake tributary near Montgomery, Minn.	Lat 44°25'42", long 93°32'10", in NE¼NW¼ sec.13, T.111 N., R.23 W., Le Sueur County, at culvert on State Highway 21, 1.8 miles upstream from Rice Lake, and 2.5 miles east of Montgomery.	3.16	1960-75	4-28-75	7.94	77
05330300	Sand Creek near New Prague, Minn.	Lat 44°32'37", long 93°32'16", in NE¼NW¼ sec.1, T.112 N., R.23 W., Le Sueur County, at culvert on State Highway 13 and 19, 1.9 miles east of New Prague.	62.4	1960-75	4-28-75	b11.41	420
05330550	Raven Stream tributary near New Prague, Minn.	Lat 44°34'21", long 93°35'58", in NW¼ sec.28, T.113 N., R.23 W., Scott County, at culvert on county road, 1.6 miles upstream from mouth, and 2.3 miles northwest of New Prague.	22.1	1960-75	4-28-75	12.14	240
05330600	Sand Creek tributary No. 2 near Jordan, Minn.	Lat 44°37'45", long 93°36'33", in NW¼NE¼ sec.5, T.113 N., R.23 W., Scott County, at culvert on State Highway 21, 0.8 mile upstream from mouth, and 2.8 miles south of Jordan.	2.62	1960-75	4-28-75	12.76	37
		St. Croix River basin					
*05336200	Glaisby Brook near Kettle River, Minn.	Lat 46°27"19", long 92°51'34", in SE¼NW¼ sec.22, T.46 N., R.20 W., Carlton County, at bridge on State Highways 27 and 73, 1.0 mile upstream from mouth, and 2.4 miles south of Kettle River.	24.2	1960-70‡, 1971-75	4-23-75	8.11	865
05336300	Moose River tributary at Moose Lake, Minn.	Lat 46°27'17", long 92°47'14", in SE¼NE¼ sec.19, T.46 N., R.19 W., Carlton County, at culvert on State Highway 27, 0.9 mile upstream from mouth, and 1.2 miles west of Moose Lake.	1.23	1960-75	4-21-75	b8.70	70
05336550	Wolf Creek tributary near Sandstone, Minn.	Lat 46°09'45", long 92°51'58", in NE¼SE¼ sec.33, T.43 N., R.20 W., Pine County, at culvert on U.S. Highway 61, 0.2 mile upstream from mouth, and 2.2 miles north of Sandstone.	5.46	1960-75	6-29-75	17.69	115
05336600	Kettle River tributary at Sandstone, Minn.	Lat 46°08'46", long 92°51'57", in SE¼SE¼ sec.4, T.42 N., R.20 W., Pine County, at culvert on U.S. Highway 61 at Sandstone, and 0.2 mile upstream from mouth.	.65	1960-75	4-16-75	a9.20	32
05338200	Mission Creek near Hinckley, Minn.	Lat 45°59'52", long 92°56'44", in SW¼SW¼ sec.25, T.41 N., R.21 W., Pine County, at culvert on U.S. Highway 23, 1.2 miles south of Hinckley.	3.84	1960-75	4-16-75	a14.56	76
		Cannon River basin					
05352700	Turtle Creek tributary No. 2 near Pratt, Minn.	Lat 44°00'02", long 93°08'30", in NW¼SW¼ sec.8, T.106 N., R.19 W., Steele County, at culvert on U.S. Highway 218, 1 mile upstream from mouth, and 1.7 miles southeast of Pratt.	1.26	1960-75	4-28-75	16.70	69
05352800	Turtle Creek tributary near Steele Center, Minn.	Lat 44°00'26", long 93°12'20", in NW¼NW¼ sec.11, T.106 N., R.20 W., Steele County, at culvert on township road, 1.3 miles upstream from mouth, and 1.6 miles northeast of Steele Center.	5.01	1960-75	6-12-75	6.41	85

* Also a low-flow partial-record station.
‡ Operated as a continuous-record gaging station.
a Backwater from ice.
b Affected by shifting control.
d Peak stage did not reach bottom of gage.
e Estimated; gage height unknown.

Annual maximum discharge at crest-stage partial-record stations during water year 1975--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum Date	Annual maximum Gage height (feet)	Annual maximum Discharge (cfs)
		Cannon River basin--Continued					
05355100	Little Cannon River tributary near Kenyon, Minn.	Lat 44°20'45", long 92°58'47", in NE¼SE¼ sec.9, T.110 N., R.18 W., Goodhue County, at culvert on State Highway 56, 0.3 mile upstream from mouth, and 5.3 miles north of Kenyon.	2.20	1960-75	6-12-75	14.10	229
05355150	Pine Creek near Cannon Falls, Minn.	Lat 44°32'27", long 92°53'40", in NE¼NE¼ sec.6, T.112 N., R.17 W., Goodhue County, at culvert on State Highway 20, 2.0 miles upstream from mouth, and 2.1 miles north of Cannon Falls.	20.2	1960-75	4-28-75	4.14	300
*05355200	Cannon River at Welch, Minn.	Lat 44°33'50", long 92°43'55", in NW¼SW¼ sec.27, T.113 N., R.16 W., Goodhue County, on right bank 0.3 mile downstream from highway bridge at Welch, and 1.8 miles upstream from Belle Creek.	1,320	1909-14‡, 1930-71‡, 1973-75	4-29-75	9.23	7,000
05355230	Cannon River tributary near Welch, Minn.	Lat 44°36'04", long 92°42'34", in SW¼SW¼ sec.11, T.113 N., R.16 W., Goodhue County, at culvert on U.S. Highway 61, 1.2 miles upstream from mouth, and 2.7 miles northeast of Welch.	.05	1960-75	8-23-75	10.07	47
		Zumbro River basin					
05372800	South Fork Zumbro River on Belt Line at Rochester, Minn.	Lat 44°00'26", long 92°28'19", in SE¼SW¼ sec.2, T.106 N., R.14 W., Olmsted County, at bridge on west-bound lane of U.S. Highway 14 at Rochester, and 1.5 miles upstream from Bear Creek.	155	1969-75	4-28-75	997.22	1,680
*05372930	Bear Creek on Belt Line at Rochester, Minn.	Lat 44°00'29", long 92°26'44", in SW¼SE¼ sec.1, T.106 N., R.14 W., Olmsted County, at bridge on west-bound lane of U.S. Highway 14 at Rochester, and 1.2 miles upstream from mouth.	80.0	1969-75	4-28-75	996.90	718
*05372950	Silver Creek at Rochester, Minn.	Lat 44°01'44", long 92°25'44", near center of sec.31, T.107 N., R.13 W., Olmsted County, at bridge on county highway at east edge of Rochester city limits, and 1.7 miles upstream from mouth.	17.3	1969-75	6-18-75	9.84	259
*05372990	Cascade Creek at Rochester, Minn.	Lat 44°01'51", long 92°28'18", in SE¼NW¼ sec.35, T.107 N., R.14 W., Olmsted County, at bridge on 7th Street NW at Rochester, and 0.6 mile upstream from mouth.	37.0	1969-75	6-18-75	978.00	240
05373350	Zumbro River tributary near South Troy, Minn.	Lat 44°11'16", long 92°25'22", in SE¼NE¼ sec.6, T.108 N., R.13 W., Olmsted County, at culvert on county road, 0.8 mile upstream from mouth, and 1.3 miles south of South Troy.	.16	1962-75	7- 5-75	12.37	117
05373700	Spring Creek near Wanamingo, Minn.	Lat 44°17'13", long 92°52'17", in SE¼SE¼ sec.32, T.110 N., R.17 W., Goodhue County, at culvert on County Highway 1, 3.5 miles upstream from mouth, and 4.2 miles southwest of Wanamingo.	9.93	1960-75	4-28-75	11.87	705
05373900	Trout Brook tributary near Goodhue, Minn.	Lat 44°21'30", long 92°36'58", in NE¼SE¼ sec.4, T.110 N., R.15 W., Goodhue County, at culvert on State Highway 58, 0.8 mile upstream from mouth, and 3.0 miles south of Goodhue.	.40	1960-75	6-30-75	b6.81	69
05374400	Long Creek near Potsdam, Minn.	Lat 44°10'48", long 92°17'23", at quarter corner on north line of sec.8, T.108 N., R.12 W., Wabasha County, at culvert on county highway, 2.6 miles northeast of Potsdam.	4.46	1966-75	7- 5-75	16.77	200
		East Indian Creek basin					
05375800	East Indian Creek tributary near Weaver, Minn.	Lat 44°13'41", long 91°58'35", in NW¼SE¼ sec.23, T.109 N., R.10 W., Wabasha County, at culvert on County Highway 14, 0.3 mile upstream from mouth, and 2.5 miles northwest of Weaver.	c.22	1962-75	4-28-75	9.04	9.8

* Also a low-flow partial-record station.
‡ Operated as a continuous-record gaging station.
b Affected by shifting control.
c Revised.

Annual maximum discharge at crest-stage partial-record stations during water year 1975--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Whitewater River basin					
*05376500	South Fork Whitewater River near Altura, Minn.	Lat 44°04'10", long 91°58'49", in SE¼ sec.14, T.107 N., R.10 W., Winona County, on left bank 500 ft upstream from highway bridge, 2 miles west of Altura, and 2.4 miles upstream from Keefer Creek.	76.8	1939-71‡, 1973-75	7- 5-75	5.39	1,090
		Root River basin					
*05383600	North Branch Root River tributary near Stewartville, Minn.	Lat 43°51'20", long 92°26'50", near center sec.36, T.105 N., R.14 W., Olmsted County, at culvert on State Highway 30, 2.0 miles east of Stewartville, and 2.3 miles upstream from mouth.	.73	1958, 1959-64‡, 1965-75	4-28-75	7.28	65
05383700	Mill Creek tributary near Chatfield, Minn.	Lat 43°53'57", long 92°14'16", in SW¼NW¼ sec.14, T.105 N., R.12 W., Olmsted County, at culvert on county highway, 0.8 mile upstream from mouth, and 4.5 miles northwest of Chatfield.	2.36	1959-75	4-28-75	13.48	407
05383720	Mill Creek near Chatfield, Minn.	Lat 43°53'01", long 92°13'46", in SE¼NW¼ sec.23, T.105 N., R.12 W., Olmsted County, at bridge on county highway, 3.4 miles northwest of Chatfield, and 4.8 miles upstream from mouth.	22.4	1962-75	6-27-75	14.21	(†)
05383850	South Fork Bear Creek near Grand Meadow, Minn.	Lat 43°43'24", long 92°35'24", in NE¼SE¼ sec.14, T.103 N., R.15 W., Mower County, at bridge on county highway, 1.5 miles northwest of Grand Meadow, and 4.0 miles upstream from North Fork Bear Creek.	14.0	1962-75	4-27-75	18.64	1,030
05384100	Duschee Creek near Lanesboro, Minn.	Lat 43°39'40", long 91°58'10", in SW¼SW¼ sec.6, T.102 N., R.9 W., Fillmore County, at culvert on county highway, 4 miles south of Lanesboro, and 7.4 miles upstream from mouth.	3.85	1959-75	4-27-75	11.47	13
*05384120	South Branch Root River at Lanesboro, Minn.	Lat 43°43'19", long 91°58'43", in NW¼SE¼ sec.13, T.103 N., R.10 W., Fillmore County, at bridge to ball park in Lanesboro, and 2.5 miles upstream from mouth.	297	1973-75	4-28-75	(d)	e3,700
05384150	Root River tributary near Whalan, Minn.	Lat 43°43'03", long 91°56'39", in SE¼SW¼ sec.17, T.103 N., R.9 W., Fillmore County, at culvert on private road, 1.3 miles southwest of Whalan.	.08	1959-75	6-15-75	7.54	26
05384200	Gribben Creek near Whalan, Minn.	Lat 43°42'26", long 91°54'50", in NE¼SE¼ sec.21, T.103 N., R.9 W., Fillmore County, at bridge on county highway, 1.9 miles southeast of Whalan, and 2.4 miles upstream from mouth.	7.80	1959-75	4-27-75	15.01	200
05384300	Big Springs Creek near Arendahl, Minn.	Lat 43°49'26", long 91°57'00", in NE¼SE¼ sec.7, T.104 N., R.9 W., Fillmore County, at culvert on State Highway 250, 2.0 miles west of Arendahl.	.14	1959-75	4-28-75	8.60	15
05384400	Pine Creek near Arendahl, Minn.	Lat 43°50'27", long 91°53'39", in SE¼NE¼ sec.3, T.104 N., R.9 W., Fillmore County, at bridge on County Highway 25, 1.3 miles northeast of Arendahl, and 4.9 miles upstream from Hemingway Creek.	28.1	1959-75	4-28-75	12.40	630
		Iowa River basin					
05457080	Rose Creek tributary near Dexter, Minn.	Lat 43°42'11", long 92°44'35", in SE¼SW¼ sec.22, T.103 N., R.16 W., Mower County, at culvert on county highway, 0.2 mile upstream from mouth, and 2.2 miles southwest of Dexter.	1.17	1962-75	4-27-75	9.81	166
		Des Moines River basin					
05474750	Beaver Creek tributary No. 2 near Slayton, Minn.	Lat 43°59'35", long 95°48'01", in NW¼NW¼ sec.17, T.106 N., R.41 W., Murray County, at culvert on State Highway 30, 2.4 miles west of Slayton, and 3.2 miles upstream from mouth.	c3.53	1961-75	4-27-75	18.93	154

* Also a low-flow partial-record station.
† Discharge not determined.
‡ Operated as a continuous-record gaging station.
c Revised.
d Peak stage did not reach bottom of gage.
e Estimated; gage height unknown.

Annual maximum discharge at crest-stage partial-record stations during water year 1975--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Des Moines River basin--Continued					
05474760	Beaver Creek tributary above Slayton, Minn.	Lat 43°59'35", long 95°47'12", in NE¼NE¼ sec.17, T.106 N., R.41 W., Murray County, at culvert on State Highway 30, 0.9 mile upstream from mouth, and 1.7 miles west of Slayton.	2.20	1961-75	4-27-75	19.21	103
05475400	Warren Lake tributary near Windom, Minn.	Lat 43°54'02", long 95°07'13", in SE¼NE¼ sec.14, T.105 N., R.36 W., Cottonwood County, at culvert on U.S. Highway 71, 0.2 mile upstream from Warren Lake, and 2.4 miles north of Windom.	1.39	1960-75	1975	(d)	<15
05475800	Des Moines River tributary near Jackson, Minn.	Lat 43°41'36", long 95°01'26", in NW¼SE¼ sec.27, T.103 N., R.35 W., Jackson County, at culvert on county highway, 0.8 mile upstream from mouth, and 5.3 miles north of Jackson.	1.52	1960-75	6-22-75	13.75	22
05475900	Des Moines River tributary No. 2 near Lakefield, Minn.	Lat 43°40'28", long 95°03'15", in SE¼SE¼ sec.32, T.103 N., R.35 W., Jackson County, at culvert on County Highway 19, 1.9 miles upstream from mouth, and 5.8 miles east of Lakefield.	5.18	1960-75	6-22-75	b5.91	54
05476010	Nelson Creek at Jackson, Minn.	Lat 43°36'56", long 94°59'36", in NW¼NW¼ sec.25, T.102 N., R.35 W., Jackson County, in flume spillway at intersection of U.S. Highways 16 and 71, at south edge of Jackson.	6.19	1959, 1964-75	4-22-75	13.63	290
05476900	Fourmile Creek near Dunnell, Minn.	Lat 43°34'57", long 94°46'26", in SW¼NW¼ sec.2, T.101 N., R.33 W., Martin County, at bridge on State Highway 4, 0.6 mile upstream from mouth, and 1.6 miles north of Dunnell.	14.0	1960-75	4-27-75	12.14	199
		Big Sioux River basin					
06482950	Mound Creek near Hardwick, Minn.	Lat 43°48'18", long 96°12'47", in SE¼SE¼ sec.15, T.104 N., R.45 W., Rock County, at culvert on county highway, 2.2 miles northwest of Hardwick.	2.47	1959-75	4- 9-75	a9.37	43
06482960	Mound Creek tributary at Hardwick, Minn.	Lat 43°46'05", long 96°12'44", in NE¼SE¼ sec.34, T.104 N., R.45 W., Rock County, at culvert on U.S. Highway 75, 0.7 mile upstream from mouth, and 0.9 mile southwest of Hardwick.	.19	1959-75	4-28-75	6.27	12
*06483000	Rock River at Luverne, Minn.	Lat 43°39'15", long 96°12'03", in SW¼NE¼ sec.11, T.102 N., R.45 W., Rock County, at bridge on Main Street (County Highway 4) in Luverne.	425	1911-14‡, 1972-75	4-14-75	6.20	1,750
06483200	Kanaranzi Creek tributary near Lismore, Minn.	Lat 43°45'41", long 95°55'56", in SW¼SW¼ sec.31, T.104 N., R.42 W., Nobles County, at culvert on county highway adjacent to State Highway 91, 60 ft upstream from mouth, and 1.2 miles northeast of Lismore.	.14	1959-75	4- 9-75	a18.46	42
06483210	Kanaranzi Creek tributary No. 2 near Wilmont, Minn.	Lat 43°43'32", long 95°52'20", in SW¼NW¼ sec.15, T.103 N., R.42 W., Nobles County, at culvert on County Highway 15, 3.5 miles southwest of Wilmont, and 3.7 miles upstream from mouth.	2.14	1966-75	4- 9-75	a6.79	46
		Little Sioux River basin					
*06603530	Little Sioux River near Spafford, Minn.	Lat 43°36'08", long 95°15'27", in NE¼NE¼ sec.34, T.102 N., R.37 W., Jackson County, at bridge on county highway, 1.6 miles downstream from Jackson County ditch No. 11, and 5.8 miles east of Spafford.	41.1	1962-75	6-22-75	8.66	370

* Also a low-flow partial-record station.
‡ Operated as a continuous-record gaging station.
< Less than.
a Backwater from ice.
b Affected by shifting control.
d Peak stage did not reach bottom of gage.

Discharge measurements at miscellaneous sites

Measurements of streamflow at points other than gaging stations are given in the following table. Those that are measurements of base flow are designated by an asterisk (*); measurements of peak flow by a dagger (†).

Discharge measurements made at miscellaneous sites during water year 1975

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		Streams tributary to Lake Superior				
Embarrass River	St. Louis River	Lat 47°39'24", long 92°11'51", in NW¼ sec.25, T.60 N., R.15 W., St. Louis County, at bridge on County Highway 362 in Embarrass, Minn.	a93.8	1942-65‡, 1971, 1974	8-21-75	*30.5
					9-22-75	75.2
		Red River of the North basin				
Monson Lake outlet	Pelican River	Lat 46°47'15", long 95°53'30", in NW¼ sec.8, T.138 N., R.41 W., Becker County, 50 ft upstream from culvert, 100 ft downstream from Monson Lake, 800 ft upstream from Lake Sallie, and 3 mi southwest of Detroit Lakes, Minn.	1.09	1968-74	b10-18-72	0
					b11-22-72	.01
					b1-10-73	0
					b2-21-73	0
					b3-21-73	.15
					b4-23-73	.11
					b5-31-73	.10
					b7- 5-73	.02
					b8- 8-73	.07
					b9-11-73	.14
					b10-19-73	.21
					b11-27-73	.30
					b12-27-73	.38
					b1-24-74	.40
					b3- 5-74	.53
					b3-28-74	.60
					b4-15-74	1.01
					b5-21-74	1.30
					b6-25-74	.71
					b8- 6-74	.17
					b9-10-74	.04
					11- 1-74	.10
Pelican River tributary	Pelican River	Lat 46°47'02", long 95°53'07", in NE¼ sec.8, T.138 N., R.41 W., Becker County, at State Fish Hatchery, on left downstream abutment of bridge over outlet from rearing ponds, 1,000 ft north of Muskrat Lake outlet, and 3 mi southwest of Detroit Lakes, Minn.	1.24	1968-74	b10-18-72	.13
					b11-22-72	.23
					b1-10-72	.18
					b2-21-73	.16
					b3-21-73	.50
					b4-23-73	*.42
					b5-31-73	*.29
					b7- 5-73	*.08
					b8- 8-73	.13
					b9-11-73	.14
					b10-19-73	.53
					b11-27-73	.23
					b12-27-73	.38
					b1-24-74	c.01
					b3- 5-74	.14
					b3-28-74	.12
					b4-15-74	.48
					b5-21-74	.52
					b6-25-74	*.22
					b8- 6-74	.30
					b9-10-74	*.06
					11- 1-74	.30
Fox Lake outlet	Pelican River	Lat 46°46'24", long 95°54'37", in NE¼ sec.18, T.138 N., R.41 W., Becker County, 500 ft downstream from Fox Lake, 800 ft upstream from Lake Sallie, and 4.5 mi southwest of Detroit Lakes, Minn.	1.15	1968-74	b10-18-72	0
					b11-22-72	1.20
					b1-10-73	.72
					b2-21-73	.77
					b3-13-73	1.35
					b4-23-73	.84
					b5-31-73	.48
					b7- 5-73	.06
					b8- 8-73	.68
					b9-11-73	.86
					b10-18-73	1.32
					b11-27-73	1.46
					b12-27-73	1.67
					b1-24-74	.87
					b3- 5-74	1.36
					b3-28-74	1.01
					b4-15-74	2.64
					b5-21-74	3.16
					b6-25-74	.86
					b8- 6-74	.20
					b9-10-74	.34
					11- 1-74	1.85

‡ Operated as a continuous-record gaging station.
a Approximately.
b Not previously published.
c Estimated.

Discharge measurements made at miscellaneous sites during water year 1975--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements Date	 Discharge (cfs)
Red River of the North basin--Continued						
Wild Rice River	Red River of the North	Lat 47°17'29", long 96°26'09", on line between sec.13, T.144 N., R.46 W., and sec.18, T.144 N., R.45 W., Norman County, at bridge on County Highway 24, 3.2 miles southeast of Ada, Minn.	-	1945-51, 1965-73	4-15-75 4-19-75 7- 1-75	1,090 3,140 4,810
South Branch Wild Rice River	Wild Rice River	Lat 47°07'23", long 96°24'25", on line between secs.8 and 9, T.142 N., R.45 W., Clay County, at bridge on County Highway 40, 5.5 miles northeast of Felton, Minn.	a180	1959-73	6-30-75	†7,610
State ditch No. 45	Wild Rice River	Lat 47°02'00", long 96°29'58", on line between secs.15 and 16, T.141 N., R.46 W., Clay County, at culvert on State Highway 9, 3 miles south of Felton, Minn.	d29.4	1959-74	4-17-75 6-29-75 7- 2-75	70.8 †1,020 174
State ditch No. 45	Wild Rice River	NW¼NW¼ sec.22, T.142 N., R.47 W., Clay County, at bridge on county road, 8 miles southwest of Borup, Minn.	-	-	b4-23-74 4-16-75 7- 2-75	78.2 287 622
Marsh River ditch	Red River of the North	NE¼NE¼ sec.13, T.144 N., R.46 W., Norman County, at bridge on County Highway 24, 3.5 miles east of Ada, Minn.	-	1945-51, 1965, 1967, 1969-70, 1972	4-15-75 4-19-75 7- 1-75	222 377 870
Burnham Creek	Red Lake River	On line between secs.8 and 9, T.149 N., R.47 W., Polk County, at bridge on county road, 2 miles northwest of Girard, Minn.	-	-	5-21-75	4.77
Burnham Creek	Red Lake River	NE¼NW¼ sec.1, T.149 N., R.48 W., Polk County, at bridge on County Highway 9, 7 miles west of Crookston, Minn.	-	-	5-20-75	10.3
Snake River	Red River of the North	Lat 48°11'50", long 96°46'45", in SE¼ sec.36, T.155 N., R.48 W., Marshall County, at bridge on Minnesota Street in Warren, Minn.	d175	1945‡, 1946-49, 1953-56‡, 1970-72, 1974	4-15-75 7- 3-75	270 2,010
Roseau River	Red River of the North	Lat 48°51'53", long 95°45'37", in SW¼ sec.13, T.162 N., R.40 W., Roseau County, at bridge on State Highway 11 at Roseau, Minn.	-	1911-14, 1943, 1967-71, 1974	4-17-75	2,510
Roseau River	Red River of the North	Lat 48°53'28", long 95°43'50", in SW¼SE¼ sec.31, T.163 N., R.39 W., Roseau County, at bridge on County Highway 28, 900 ft downstream from Hay Creek, and 3.2 mi northeast of Roseau, Minn.	-	1973-74	b10- 3-73 b11- 6-73 b12-11-73 b1-22-74 b3- 5-74 b4-29-74 b6- 5-74 b7- 9-74 b8-28-74 10- 2-74 11-14-74 12-18-74 2- 6-75 3-17-75 5- 1-75 6- 9-75 7-21-75 9- 8-75	363 78.7 *23.0 *7.77 *7.14 1,120 390 28.6 371 *31.6 *66.1 *15.7 *13.9 *10.3 3,030 166 *123 *8.75
Lake of the Woods basin						
Stony River	South Kawishiwi River	Lat 47°41'10", long 91°38'20", in NW¼NW¼ sec.17, T.60 N., R.10 W., Lake County, at bridge on State Highway 1, 11 mi upstream from Birch Lake, and 12.8 mi northwest of Isabella, Minn.	180	1953-65‡, 1967-68, 1972	8-27-75	*41.0

‡ Operated as a continuous-record gaging station.
a Approximately.
b Not previously published.
d Revised.

Discharge measurements made at miscellaneous sites during water year 1975--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		Lake of the Woods basin--Continued				
eLittle Fork River	Rainy River	Lat 47°51'16", long 92°41'56", in NE¼SE¼ sec.13, T.62 N., R.19 W., St. Louis County, at bridge on U.S. Highway 53, 0.6 mile west of Cook, Minn.	61.5	1950, 1958-73	4-21-75	267
eBig Fork River	Rainy River	Lat 47°44'56", long 93°46'31", in SE¼NE¼ sec.27, T.61 N., R.27 W., Itasca County, at bridge on State Highway 6, 1 mile south of County Highway 14, and 5.5 miles west of Bigfork, Minn.	602	1970-73	8-18-75	513
eBig Fork River	Rainy River	Lat 47°57'13", long 93°45'16", in NW¼NE¼ sec.14, T.63 N., R.27 W., Koochiching County, at bridge on State Highway 6, 0.2 mile upstream from Bowerman Brook, 1 mile south of County Highway 5, and 9 miles northwest of Effie, Minn.	a1,020	1970-72	8-18-75	570
Warroad River	Lake of the Woods	SW¼SE¼ sec.29, T.163 N., R.36 W., Roseau County, at bridge on State Highway 11, in Warroad, Minn.	a256	1969-70, 1974	4-25-75	2,180
		Leech Lake River basin				
eBoy River	Leech Lake	Lat 47°04'51", long 94°05'54", in SE¼SE¼ sec.28, T.142 N., R.27 W., Cass County, at bridge on County Highway 53, 1.5 miles upstream from Boy Lake, and about 9 miles northwest of Remer, Minn.	a310	1964-65, 1970-71, 1973-74	5- 5-75	342
		Mississippi River main stem				
Mississippi River	Gulf of Mexico	N½ sec.13, T.155 N., R.26 W., Itasca County, at dam at outlet of Pokegama Lake, 3.5 miles northwest of Grand Rapids, Minn.	a3,360	1929-30, 1944-45, 1948-55, 1957-74	b1-20-71	1,530
					b2-10-71	1,540
					b3-17-71	1,740
					b3-29-71	2,080
					b5-11-71	789
					b6-15-71	343
					b7-13-71	474
					b10- 6-71	1,160
					b11-10-71	2,020
					b11-11-71	2,090
					b12- 9-71	2,100
					b3-30-72	2,320
					b6-13-72	1,570
					b7- 5-72	360
					b8- 9-72	993
					b9- 6-72	1,260
					b10-13-72	1,640
					b11- 7-72	1,660
					b2- 5-73	1,370
					b3-27-73	422
					b5- 1-73	746
					b6- 7-73	520
					b9-12-73	407
					b11- 5-73	2,510
					b12- 4-73	2,370
					b4- 5-74	1,570
					2- 4-75	1,910
					2-10-75	1,910
					6- 3-75	2,490
		Crow Wing River basin				
Wing River	Leaf River	On line between secs.19 and 20, T.132 N., R.36 W., Otter Tail County, at bridge on county road, 6.4 miles northeast of Parkers Prairie, Minn.	-	-	b10- 2-73	*9.62
Wing River	Leaf River	SE¼SE¼ sec.21, T.132 N., R.36 W., Otter Tail County, at bridge on County Highway 42, 3.5 miles southwest of Wrightstown, Minn.	-	-	b10- 2-73	*10.4

a Approximately.
b Not previously published.
e At site of active, low-flow partial-record station.

Discharge measurements made at miscellaneous sites during water year 1975--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		Crow Wing River basin--Continued				
Wing River	Leaf River	On line between secs.19 and 30, T.132 N., R.35 W., Todd County, at bridge on County Highway 32, 4.5 miles southwest of Bertha, Minn.	-	-	b10- 2-73	*14.0
Long Prairie River	Crow Wing River	NW¼SW¼ sec.15, T.129 N., R.37 W., Douglas County, at bridge on county road, 0.1 mile below Lake Carlos, and 2 miles west of Carlos, Minn.	-	-	b10- 1-73	*15.2
Long Prairie River	Crow Wing River	On line between secs.14 and 15, T.129 N., R.37 W., Douglas County, at bridge on State Highway 29, about 1.2 miles northwest of Carlos, Minn., and about 1.5 miles downstream from Carlos Lake.	-	1943-45, 1972-74	b10- 1-73	*18.2
Long Prairie River	Crow Wing River	NW¼SW¼ sec.6, T.129 N., R.36 W., Douglas County, at bridge on County Highway 65, 3 miles northeast of Carlos, Minn.	-	-	b10- 1-73	*18.8
Long Prairie River	Crow Wing River	NW¼NW¼ sec.9, T.129 N., R.36 W., Douglas County, at bridge on County Highway 3, 0.8 mile north of Belle River, Minn.	-	-	b10- 1-73	*20.8
Spruce Creek	Long Prairie River	NE¼SE¼ sec.29, T.131 N., R.36 W., Otter Tail County, at bridge on County Highway 69, 5 miles southeast of Parkers Prairie, Minn.	-	-	b10- 2-73	*17.3
Spruce Creek	Long Prairie River	NE¼SW¼ sec.16, T.130 N., R.36 W., Douglas County, at bridge on county road, at Spruce Center, Minn.	-	-	b10- 2-73	*6.20
Spruce Creek	Long Prairie River	On line between secs.21 and 28, T.130 N., R.36 W., Douglas County, at bridge on County Highway 14, 3.4 miles east of Miltona, Minn.	-	1972-74	b10- 2-73	*8.18
Spruce Creek	Long Prairie River	SE¼SE¼ sec.33, T.130 N., R.36 W., Douglas County, at bridge on County Highway 5, 1.5 miles upstream from mouth, and 2 miles northeast of Belle River, Minn.	-	-	b10- 1-73	*9.70
		North Branch Two Rivers basin				
North Branch Two Rivers	Mississippi River	Lat 45°50'25", long 94°27'06", on line between secs.3 and 4, T.127 N., R.30 W., Morrison County, at bridge on county road, 2 miles east of Elmdale, Minn.	-	1970, 1973	b7-31-74 8-22-75	*.06 *.25
		Platte River basin				
Platte River	Mississippi River	Lat 45°59'43", long 94°12'31", in NE¼NE¼ sec.35, T.41 N., R.31 W., Morrison County, at bridge on county road, 4.2 miles south of Freedhem, and 5 miles northwest of Pierz, Minn.	-	1973	b7- 8-74 b7-30-74 8-21-75	*15.5 *10.3 *16.0
Skunk River	Platte River	Lat 46°01'02", long 94°01'09", on line between secs.20 and 21, T.41 N., R.29 W., Morrison County, at double box culvert on County Highway 267, 2.6 miles southeast of Lastrup, Minn.	-	1969-70, 1973	b8- 1-74 8-22-75	*2.54 *11.3
Skunk Creek	Skunk River	Lat 45°56'42", long 94°05'40", on line between secs.20 and 21, T.40 N., R.30 W., Morrison County, at County Highway 239, 1.5 miles southeast of Genola, Minn.	-	1969-70, 1973	b10-23-73 b8- 1-74	*1.51 *.07
Platte River	Mississippi River	Lat 45°55'32", long 94°15'34", in NW¼NW¼ sec.31, T.40 N., R.31 W., Morrison County, at bridge on County Highway 35, 0.5 mile downstream from Rice Lake, and 6 miles southeast of Little Falls, Minn.	-	1938, 1963-65, 1969-70, 1973	b7-31-74 8-21-75	*40.6 *43.3

b Not previously published.

Discharge measurements made at miscellaneous sites during water year 1975--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		Platte River basin--Continued				
Platte River	Mississippi River	NE¼NW¼ sec.12, T.39 N., R.32 W., Morrison County, at bridge on County Highway 34, 4.7 miles north of Royalton, Minn.		1969-70, 1973	b7-31-74 8-22-75	*47.6 *46.6
		Rum River basin				
Rum River	Mississippi River	SE¼SE¼ sec.36, T.36 N., R.24 W., Isanti County, at bridge on State Highway 47, at West Point, Minn.	1,010	1958-62, 1965-67, 1972,	4-21-75 4-29-75 5- 1-75	7,220 7,900 6,790
Rum River	Mississippi River	N½ sec.32, T.36 N., R.23 W., Isanti County, at bridge on County Highway 64, at Cambridge, Minn.	a1,160	1909-14‡, 1965, 1969-70	4-20-75 4-21-75 5- 2-75	3,600 6,540 8,380
Rum River	Mississippi River	SE¼NE¼ sec.21, T.34 N., R.24 W., Isanti County, at bridge on County Highway 10, 2.5 miles north of St. Francis, Minn.	-	1965	4-20-75 4-22-75 4-23-75 4-24-75 5- 2-75	2,700 5,520 6,700 6,980 7,640
Rum River	Mississippi River	SW¼SE¼ sec.32, T.34 N., R.24 W., Anoka County, at bridge on County Highway 24, in St. Francis, Minn.	-	1903‡	4-20-75 4-22-75 4-23-75 4-24-75 5- 2-75	2,840 5,690 7,120 6,750 8,110
Cedar Creek	Rum River	On line between secs.32 and 33, T.33 N., R.24 W., Anoka County, at bridge on County Highway 9, 7 miles northeast of Anoka, Minn.	a84	-	4-16-75 4-28-75 4-25-75 5-13-75	136 347 212 113
Rum River	Mississippi River	Lat 45°17'30", long 93°23'18", on line between sec.6, T.32 N., R.24 W., and sec.1, T.32 N., R.25 W., Anoka County, at bridge on County Highway 7, 2.5 miles downstream from Cedar Creek, and 6 miles north of Anoka, Minn.	1,430	1905-06‡, 1909-10‡, 1965	4-20-75 4-22-75 4-23-75 4-24-75 4-25-75 5- 2-75	2,810 4,920 6,670 7,420 7,950 8,350
Ford Brook	Trott Brook	SE¼SE¼ sec.35, T.33 N., R.25 W., Anoka County, at bridge on State Highway 47, 6 miles north of Anoka, Minn.	-	-	4-18-75 4-28-75	84.4 169
eTrott Brook	Rum River	Lat 45°17'16", long 93°25'08", in SW¼SE¼ sec.2, T.32 N., R.25 W., Anoka County, at bridge on State Highway 47, 0.8 mile upstream from mouth, and 3.9 miles southeast of Nowthen, Minn.	72.0	1965, 1969-70, 1974	4-18-75 4-28-75	204 303
Rum River	Mississippi River	Lat 45°11'54", long 93°23'28", in SE¼SE¼ sec.1, T.31 N., R.25 W., Anoka County, at bridge on Main Street in Anoka, Minn., 450 ft downstream from dam, and 0.6 mile upstream from mouth.	1,580	1952, 1965, 1970, 1973-74	10- 8-74 11-15-74 12-30-74 1-21-75 2-19-75 3-20-75 4-23-75 4-25-75 5-30-75 6-18-75 7-17-75 8-28-75 9-23-75	*336 *354 *297 *304 *335 467 6,380 7,650 1,290 1,590 1,430 889 691
		Coon Creek basin				
Coon Creek	Mississippi River	SE¼NW¼ sec.27, T.32 N., R.24 W., Anoka County, at bridge on County Highway 18, 4 miles northeast of Anoka, Minn.	-	-	4-17-75 4-25-75	142 178
		Rice Creek basin				
Clearwater Creek	Rice Creek	NE¼NW¼ sec.23, T.31 N., R.22 W., Anoka County, at culvert on County Highway 14, 0.2 mile east of Centerville, Minn.	-	-	7- 2-75	94.9

‡ Operated as a continuous-record gaging station.
a Approximately.
b Not previously published.
e At site of active, low-flow partial-record station.

Discharge measurements made at miscellaneous sites during water year 1975--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		Rice Creek basin--Continued				
Rice Creek	Mississippi River	Lat 45°05'30", long 93°15'47", on line between secs.14 and 15, T.30 N., R.24 W., Anoka County, at culvert on State Highway 47 (University Avenue), at north edge of Fridley, Minn.	149	1969-74	10- 8-74	*7.15
					11-18-74	*9.78
					12-30-74	*5.43
					1-24-75	*3.29
					2-13-75	*3.00
					3-25-75	26.7
					4-24-75	250
					6-17-75	260
					7- 2-75	625
					7-17-75	313
					8-20-75	142
					9-22-75	105
		Bassett Creek basin				
Bassett Creek	Mississippi River	W½ sec.28, T.118 N., R.21 W., Hennepin County, at bridge on County Highway 66, in Golden Valley, Minn., and 0.2 mi west of underpass on State Highway 100.	-	1963-74	10- 7-74	*1.58
					11-19-74	*1.56
					4-28-75	114
					6-13-75	73.3
					7-22-75	*15.6
					8-15-75	*9.86
					9-26-75	*6.13
North Fork Bassett Creek	Bassett Creek	NW¼ sec.21, T.118 N., R.21 W., Hennepin County, at culvert on 34th Avenue North at Crystal, Minn., and 0.8 mi upstream from mouth.	-	1963-74	10- 7-74	0
					11-19-74	*c.05
					6-13-75	6.28
					7-22-75	0
					8-16-75	0
					9-26-75	*c.01
South Fork Bassett Creek	Bassett Creek	Near center of W½ sec.19, T.29 N., R.24 W., Hennepin County, at culvert on Olson Memorial Highway, 0.2 mi east of State Highway 100, in Golden Valley, Minn.	-	1963-69, 1971-74	10- 7-74	*.77
					11-19-74	*.68
					6-13-75	4.95
					7-22-75	*1.44
					8-15-75	8.86
					9-26-75	*1.25
Bassett Creek	Mississippi River	SE¼ sec.20, T.29 N., R.24 W., Hennepin County, at Fruen Mill, Minneapolis, Minn., and 700 ft downstream from Glenwood Avenue.	41.6	1952, 1954-55, 1963-74	10- 7-74	*3.38
					11-19-74	*4.00
					4-28-75	321
					6-13-75	111
					7-22-75	16.1
					8-15-75	*9.92
					9-26-75	*10.5
		Mississippi River main stem				
Mississippi River	Gulf of Mexico	SW¼ sec.24, T.29 N., R.24 W., Hennepin County, at Interstate Highway 35W bridge in Minneapolis, Minn.	-	1938, 1970, 1972, 1974	4-25-75	49,900
					7- 3-75	28,700
					8-19-75	*5,200
Mississippi River	Gulf of Mexico	In sec.20, T.28 N., R.23 W., Hennepin-Ramsey County line, downstream from U.S. Lock and Dam No. 1 and Minnehaha Creek, upstream from Minnesota River, and between Minneapolis and St. Paul, Minn.	-	1924-25, 1935, 1938-39, 1941, 1943, 1945-50, 1954, 1957-59, 1961-70, 1972-74	11- 5-74	8,170
					8-21-75	*6,520
					9-22-75	*5,740
		Minnesota River basin				
Black Dog Creek	Minnesota River	Lat 44°49'46", long 93°13'08", in SE¼NW¼ sec.18, T.27 N., R.20 W., Dakota County, 0.2 mi upstream from mouth, and 0.8 mi northeast of Black Dog Lake, at Burnsville, Minn.	-	-	8-27-75	*4.30
					9-18-75	*1.80
		Mississippi River main stem				
Mississippi River	Gulf of Mexico	On line between secs.21 and 22, T.115 N., R.17 W., on Dakota-Washington County line, at bridge on U.S. Highway 61, at Hastings, Minn.	a37,100	1928, 1931-39, 1941-57, 1959-74	4-24-75	57,200
					5-21-75	34,900
					7- 8-75	36,700

a Approximately.
c Estimated.

Discharge measurements made at miscellaneous sites during water year 1975--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		St. Croix River basin				
eSnake River	St. Croix River	Lat 45°51'50", long 93°17'47", in SW¼SE¼ sec.14, T.39 N., R.24 W., Kanabec County, at bridge on State Highway 23 and 65, at Mora, Minn.	d440	1909-13‡, 1950, 1966-69, 1972, 1974	4-21-75	3,870
					4-24-75	6,460
eWest Branch Sunrise River	Sunrise River	Lat 45°23'29", long 92°59'52", in SE¼NE¼ sec.31, T.34 N., R.21 W., Chisago County, at bridge on county road, at southwest edge of Stacy, Minn., and 2.0 mi upstream from mouth.	53.5	1967, 1969-70, 1974	4-15-75	53.4
					4-28-75	200
					5-13-75	108
St. Croix River	Mississippi River	SE¼SE¼ sec.9, T.26 N., R.20 W., Pierce County, at bridge on U.S. Highway 10, at Prescott, Wis., about 500 ft upstream from mouth.	a7,650	1928-30, 1932-39, 1946-48, 1950, 1953-57, 1959-74	4-24-75	30,900
					5-21-75	6,750
					7- 8-75	20,100
		Vermillion River basin				
Vermillion River	Mississippi River	Lat 44°43'12", long 92°51'57", in SE¼SW¼ sec.33, T.115 N., R.17 W., Dakota County, at bridge on County Highway 47 in Hastings, Minn., 0.7 mi upstream from mill dam, and 3 mi upstream from Vermillion Slough.	195	1935-38, 1940-41, 1942-47‡, 1949, 1952, 1965-74	10-10-74	*29.0
					11-13-74	*28.2
					12-20-74	*24.6
					1-17-75	*16.2
					2-10-75	*19.2
					3-21-75	47.3
					4-29-75	989
					5-16-75	114
					6-19-75	265
					9-24-75	*49.7
		Mississippi River main stem				
Mississippi River	Gulf of Mexico	S½SE¼ sec.17, T.110 N., R.9 W., Buffalo County, at U.S. Corps of Engineers Lock and Dam No. 4 at Alma, Wis.	a57,100	1930-31‡, 1944, 1946, 1965, 1969, 1972-74	5- 7-75	127,000
		Pleasant Valley Creek basin				
ePleasant Valley Creek	Mississippi River	Lat 44°01'12", long 91°36'08", on line between secs.36, T.107 N., R.7 W., and sec.1, T.106 N., R.7 W., Winona County, at bridge on County Highway 15, at southeast edge of Winona, Minn.	12.0	1967-71, 1974	4-15-75	10.8
		Mississippi River main stem				
Mississippi River	Gulf of Mexico	Lat 43°48'45", long 91°15'25", in sec.31, T.16 N., R.7 W., La Crosse County, at La Crosse, Wis., 0.4 mi downstream from La Crosse River, and at mile 697.8 upstream from Ohio River.	a62,800	1929-55‡, 1965-67, 1969, 1971-72	5- 7-75	143,000

‡ Operated as a continuous-record gaging station.
a Approximately.
d Revised.
e At site of active, low-flow partial-record station.

Low-flow investigations in the Crow Wing River basin

Two series of discharge measurements were made in the Crow Wing River basin (Pineland irrigation study area) during the 1975 water year to determine variations of base flow. Base-flow conditions were excellent for the first series of measurements made during Oct. 2-5, 1974. Total precipitation for the 19 days preceding the measurements was less than 0.10 inch, only 0.08 inch at Park Rapids and 0.02 inch at Wadena. Although base-flow conditions were less ideal for the second series of measurements made during July 28-31, 1975, these measurements should also represent base flow. On July 23, 0.25 to 0.50 inch of rain fell in the area but little direct runoff occurred because of dry antecedent conditions.

Discharge measurements made in the Crow Wing River basin, Minn., during water year 1975

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
*Crow Wing River	Mississippi River	Lat 46°57'03", long 94°48'26", in NW¼NW¼ sec.13, T.140 N., R.33 W., Hubbard County, at bridge on County Highway 119, 0.1 mile downstream from Eighth Crow Wing Lake outlet dam, 1.2 miles southeast of Nevis, and 5.3 miles southwest of Akeley, Minn.	-	1965	10- 4-74 7-28-75	26.3 24.0
Crow Wing River	Mississippi River	SW¼SE¼ sec.15, T.140 N., R.33 W., Hubbard County, at culvert on County Highway 13, at Seventh Crow Wing Lake outlet, and about 1.5 miles south of Nevis, Minn.	-	-	10- 4-74 7-28-75	39.3 30.6
Crow Wing River	Mississippi River	NW¼SW¼ sec.29, T.140 N., R.33 W., Hubbard County, at Fifth Crow Wing Lake outlet, 4.5 miles southwest of Nevis, Minn.	-	1965	10- 4-74 7-28-75	78.2 77.3
Crow Wing River	Mississippi River	Lat 46°50'48", long 94°52'29", in NE¼NE¼ sec.20, T.139 N., R.33 W., Hubbard County, at bridge on State Highway 87, at Third Crow Wing Lake outlet, 6.6 miles east of Hubbard, Minn.	a218	1930-31, 1964-66, 1970-71, 1973	b10- 4-74 b7-29-75	105 112
Bender Creek	First Crow Wing Lake	NE¼NE¼ sec.19, T.139 N., R.32 W., Hubbard County, at culvert on county road, near Tripp Lake outlet, 12 miles east of Hubbard, Minn.	-	-	10- 4-74 7-28-75	.42 5.71
Bender Creek tributary	Bender Creek	SE¼SE¼ sec.19, T.139 N., R.32 W., Hubbard County, at bridge on County Highway 110, 7.3 miles northeast of Huntersville, Minn.	-	-	7-28-75	0
*Bender Creek	First Crow Wing Lake	Lat 46°49'47", long 94°50'17", in NW¼NE¼ sec.27, T.139 N., R.33 W., Hubbard County, at culvert on road at First Crow Wing Lake inlet, 4.5 miles northeast of Huntersville, Minn.	-	-	10- 4-74 7-29-75	4.60 3.03
*Crow Wing River	Mississippi River	Lat 46°49'23", long 94°52'18", in NW¼SW¼ sec.28, T.139 N., R.33 W., Hubbard County, downstream from First Crow Wing Lake outlet, at bridge on County Highway 109, and 3.4 miles northeast of Huntersville, Minn.	-	1955	10- 3-74 7-28-75	94.8 128
*Fish Creek	Shell Lake	Lat 46°58'12", long 95°24'50", in NE¼SE¼ sec.1, T.140 N., R.38 W., Becker County, at culvert on County Highway 26, 1.4 miles west of Ponsford, Minn.	-	-	7-30-75	.76
*Shell River	Crow Wing River	Lat 46°56'50", long 95°24'38", in NW¼NW¼ sec.18, T.140 N., R.37 W., Becker County, at culvert on County Highway 39, at Shell Lake outlet, 2.0 miles southwest of Ponsford, Minn.	-	-	10- 2-74 7-30-75	1.32 9.36
Shell River	Crow Wing River	NW¼NE¼ sec.30, T.140 N., R.36 W., Becker County, at culvert on State Highway 34, 1.0 mile west of Osage, Minn.	-	-	10- 2-74 7-30-75	6.87 13.2
*Shell River	Crow Wing River	Lat 46°51'45", long 95°11'30", in NW¼NE¼ sec.14, T.139 N., R.36 W., Becker County, at bridge on County Highway 42, 7.5 miles southwest of Park Rapids, and 8.8 miles northwest of Hubbard, Minn.	-	-	10- 2-74 7-30-75	9.11 17.4
Shell River	Crow Wing River	NW¼NE¼ sec.9, T.138 N., R.35 W., Wadena County, at bridge on county road, 0.3 mile east of U.S. Highway 71, and 2.6 miles north of Menahga, Minn.	-	-	10- 3-74 7-29-75	15.5 24.7

* Miscellaneous water-quality data available at this site also.
a Approximately.
b Also published under measurements made at low-flow partial-record stations.

Discharge measurements made in the Crow Wing River basin, Minn., during water year 1975--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Blueberry River	Shell River	SE¼SE¼ sec.24, T.139 N., R.36 W., Becker County, at culvert on county road, 2 miles downstream from Blueberry Lake, and 7.2 miles southeast of Osage, Minn.	-	-	7-30-75	5.07
Blueberry River tributary	Blueberry River	SW¼SW¼ sec.35, T.139 N., R.36 W., Becker County, at bridge on County Road 125, 0.7 mile upstream from mouth, and 6.3 miles northwest of Menahga, Minn.	-	-	7-30-75	1.33
Kettle River	Blueberry River	SW¼SW¼ sec.7, T.138 N., R.35 W., Wadena County, at culvert on county road, 2 miles upstream from mouth, and 3.5 miles northwest of Menahga, Minn.	-	-	7-30-75	8.07
*Blueberry River	Shell River	Lat 46°45'31", long 95°06'01", NW¼NW¼ sec.22, T.138 N., R.35 W., Wadena County, at bridge on U.S. Highway 71, in Menahga, Minn.	-	-	10- 3-74 7-30-75	19.2 19.5
Shell River	Crow Wing River	NE¼SW¼ sec.2, T.138 N., R.35 W., Wadena County, at bridge on county road at Blueberry Lake outlet, 3.1 miles north of Menahga, and 8.3 miles west of Huntersville, Minn.	-	-	10- 3-74 7-30-75	38.7 43.6
Shell River tributary	Shell River	NE¼NE¼ sec.35, T.139 N., R.35 W., Hubbard County, at jeep trail, 0.3 mile upstream from mouth, 0.8 mile below Hinds Lake, and 2.5 miles southwest of Hubbard, Minn.	-	-	7-29-75	4.62
Fishhook River	Shell River	NE¼SW¼ sec.25, T.140 N., R.35 W., Hubbard County, at bridge 0.5 mile south of dam, at Park Rapids, Minn.	-	-	10- 4-74 7-29-75	22.8 66.4
*Fishhook River	Shell River	Lat 46°52'42", long 95°02'02", in SW¼SW¼ sec.6, T.139 N., R.34 W., Hubbard County, site on private land, 0.6 mile upstream from Straight River, and 3.2 miles south of Park Rapids, Minn.	-	-	7-29-75	67.8
Straight River	Fishhook River	SE¼NW¼ sec.6, T.140 N., R.36 W., Becker County, at culvert on road, 0.5 mile upstream from Straight Lake, and 3.7 miles northwest of Osage, Minn.	-	-	7-30-75	6.61
*Straight River	Fishhook River	Lat 46°55'14", long 95°15'08", in NE¼NE¼ sec.29, T.140 N., R.36 W., Becker County, at Straight Lake outlet, at culvert on State Highway 34, at Osage, Minn.	-	1944	10- 2-74 7-30-75	16.8 22.2
*Straight River	Fishhook River	Lat 46°52'30", long 95°03'56", in NW¼NE¼ sec.11, T.139 N., R.35 W., Hubbard County, at bridge on U.S. Highway 71, 3.2 miles south of Park Rapids, and 3.7 miles northwest of Hubbard, Minn.	53.2	1970-71, 1973	b10- 2-74 b7-29-75	58.4 56.1
Fishhook River	Shell River	Lat 46°51'48", long 90°01'30", in NW¼NE¼ sec.18, T.139 N., R.34 W., Hubbard County, at bridge on State Highway 87, 0.5 mile downstream from Straight River, 2 miles northwest of Hubbard, and 4.4 miles southeast of Park Rapids, Minn.	a374	1964-66, 1970-71, 1973	b10- 2-74 b7-29-75	96.2 130
*Long Lake outlet	Fishhook River	Lat 46°50'28", long 95°00'44", in SW¼NW¼ sec.20, T.139 N., R.34 W., Hubbard County, at bridge on State Highway 87, at Hubbard, Minn.	22.5	1964-66, 1970-71, 1973	b10- 3-74 b7-28-75	11.0 17.0
Fishhook River	Shell River	SW¼NW¼ sec.30, T.139 N., R.34 W., Hubbard County, at mouth, 1.3 miles southwest of Hubbard, and 6.1 miles northeast of Menahga, Minn.	-	-	7-29-75	154
Shell River	Crow Wing River	Lat 46°49'47", long 95°01'53", in SW¼NW¼ sec.30, T.139 N., R.34 W., Hubbard County, at bridge on county road, just downstream from Fishhook River, and 1.2 miles southwest of Hubbard, Minn.	a600	1964-66, 1970-71, 1973	b10- 3-74 b7-29-75	146 215

* Miscellaneous water-quality data available at this site also.
a Approximately.
b Also published under measurements made at low-flow partial-record stations.

Discharge measurements made in the Crow Wing River basin, Minn., during water year 1975--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements Date	Measurements Discharge (cfs)
*Shell River	Crow Wing River	Lat 46°47'16", long 95°01'02", in NW¼NW¼ sec.8, T.138 N., R.34 W., Wadena County, at bridge on County Highway 23, 6.0 miles west of Huntersville, and 11 miles northeast of Sebeka, Minn.	-	-	10- 3-74 7-30-75	156 195
*Shell River	Crow Wing River	Lat 46°48'26", long 94°53'21", in SW¼SW¼ sec.32, T.139 N., R.33 W., Hubbard County, at bridge on County Highway 13, 500 ft upstream from mouth, 2.2 miles north of Huntersville, and 12 miles north of Nimrod, Minn.	-	1965	10- 3-74 7-29-75	197 271
Crow Wing River tributary	Crow Wing River	SW¼SW¼ sec.30, T.138 N., R.33 W., Wadena County, at culvert on County Highway 15, 3.2 miles south of Huntersville, Minn.	-	-	10- 3-74	.12
Jim Cook Lake outlet	Crow Wing River	NW¼SW¼ sec.21, T.138 N., R.34 W., Wadena County, at culvert on County Highway 149, at Jim Cook Lake outlet, 5.2 miles southwest of Huntersville, Minn.	-	-	10- 3-74 7-30-75	.49 .82
Yaeger Lake inlet	Crow Wing River	NE¼NW¼ sec.3, T.137 N., R.34 W., Wadena County, at culvert on County Highway 15, 0.6 miles upstream from Yaeger Lake, and 5.3 miles southwest of Huntersville, Minn.	-	-	10- 3-74 7-30-75	1.08 1.38
Unnamed Stream	Crow Wing River tributary	NE¼NE¼ sec.3, T.137 N., R.34 W., Wadena County, at bridge on County Highway 150, 7.3 miles southeast of Menahga, Minn.	-	-	10- 3-74	0
Unnamed Stream	Crow Wing River tributary	NW¼NW¼ sec.2, T.137 N., R.34 W., Wadena County, at culvert on County Highway 15, 7.4 miles southeast of Menahga, Minn.	-	-	10- 3-74 7-30-75	.16 .23
Crow Wing River tributary	Crow Wing River	NE¼NE¼ sec.2, T.137 N., R.34 W., Wadena County, at culvert on county road, 0.2 mile upstream from mouth, and 9.6 miles southeast of Hubbard, Minn.	-	-	10- 3-74 7-29-75	.75 19.5
Crow Wing River tributary	Crow Wing River	SW¼SW¼ sec.5, T.137 N., R.33 W., Wadena County, at culvert on County Highway 145, at mouth, 4.3 miles north of Nimrod, Minn.	-	-	10- 3-74 7-30-75	.22 .66
Crow Wing River tributary	Crow Wing River	SE¼SE¼ sec.12, T.138 N., R.33 W., Wadena County, at culvert on county road, 5.0 miles east of Huntersville, and 10 miles northeast of Nimrod, Minn.	-	-	10- 2-74	.02
Unnamed Stream	Crow Wing River tributary	SW¼SW¼ sec.25, T.138 N., R.33 W., Wadena County, at bridge on County Highway 155, 4.7 miles southeast of Huntersville, and 7.5 miles northeast of Nimrod, Minn.	-	-	10- 2-74	0
Crow Wing River tributary	Crow Wing River	SW¼SE¼ sec.26, T.138 N., R.33 W., Wadena County, at bridge on County Highway 154, 4.7 miles southeast of Huntersville, and 7.1 miles northeast of Nimrod, Minn.	-	-	10- 2-74	.08
Crow Wing River tributary	Crow Wing River	NW¼SW¼ sec.9, T.137 N., R.33 W., Wadena County, at culvert on County Highway 145, 3.9 miles north of Nimrod, Minn.	-	-	10- 2-74 7-30-75	.27 .37
Big Swamp Creek	Crow Wing River	SW¼SW¼ sec.9, T.138 N., R.32 W., Cass County, at culvert on county road, 7.0 miles east of Huntersville, Minn.	-	-	10- 2-74	2.18
*Big Swamp Creek	Crow Wing River	Lat 46°42'37", long 94°48'27", in SE¼NE¼ sec.2, T.137 N., R.33 W., Wadena County, at culvert on Bunny Hill Road, 6.1 miles southeast of Huntersville, and 14 miles southeast of Menahga, Minn.	-	-	10- 2-74 7-30-75	4.14 4.60
Big Swamp Creek tributary	Big Swamp Creek	NW¼SW¼ sec.1, T.137 N., R.33 W., Wadena County, at culvert on Bunny Hill Road, 6.1 miles southeast of Huntersville,and 14 miles southeast of Menahga, Minn.	-	-	10- 2-74 7-30-75	.74 1.13

* Miscellaneous water-quality data available at this site [illegible]

Discharge measurements made in the Crow Wing River basin, Minn., during water year 1975--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
*Big Swamp Creek	Crow Wing River	Lat 46°40'07", long 94°51'15", in SW¼NE¼ sec.21, T.137 N., R.33 W., Wadena County, at bridge on county road, 2.4 miles northeast of Nimrod, Minn.	-	-	10- 2-74 7-30-75	7.03 9.22
Big Swamp Creek tributary	Big Swamp Creek	SW¼SE¼ sec.16, T.137 N., R.33 W., Wadena County, at culvert on County Highway 145, 2.6 miles northeast of Nimrod, Minn.	-	-	7-30-75	0
Crow Wing River tributary	Crow Wing River	NE¼SW¼ sec.29, T.137 N., R.33 W., Wadena County, at culvert on County Highway 14, 0.7 mile north of junction with County Highway 12, at Nimrod, Minn.	-	-	10- 3-74 7-30-75	.63 .06
Cat River	Crow Wing River	NE¼SW¼ sec.12, T.137 N., R.35 W., Wadena County, at culvert on County Highway 13, 4.6 miles southeast of Menahga, and 4.9 miles northeast of Sebeka, Minn.	-	-	10- 3-74 7-28-75	3.37 2.58
cKitten Creek	Cat River	Lat 46°40'33", long 95°04'46", in SE¼SE¼ sec.15, T.137 N., R.35 W., Wadena County, at culvert on county highway, 3.2 miles north of Sebeka, Minn., and 3.3 miles upstream from mouth.	14.7	1961-74	10- 3-74 7-28-75	1.66 12.0
Cat River	Crow Wing River	NW¼NW¼ sec.28, T.137 N., R.34 W., Wadena County, at bridge on county road, 5.4 miles northwest of Nimrod, and 5.1 miles northeast of Sebeka, Minn.	-	-	10- 3-74 7-29-75	8.40 10.8
Cat River tributary	Cat River	NW¼NW¼ sec.29, T.137 N., R.34 W., Wadena County, at culvert on County Highway 23, 2.4 miles upstream from mouth, and 3.9 miles northeast of Sebeka, Minn.	-	-	10- 3-74	0
Cat River tributary	Cat River	SW¼NW¼ sec.35, T.137 N., R.34 W., Wadena County, at culvert on county road, 3.5 miles west of Nimrod, and 7.3 miles northeast of Blue Grass, Minn.	-	-	10- 3-74 7-29-75	.15 0
cCat River	Crow Wing River	Lat 46°37'49", long 94°55'51", in SW¼SW¼ sec.36, T.137 N., R.34 W., Wadena County, at bridge on State Highway 227, 2.5 miles west of Nimrod, Minn., and 3.0 miles upstream from mouth.	49.2	1961-74	10- 4-74 7-29-75	10.9 12.5
Cat River tributary	Cat River	SE¼NE¼ sec.36, T.137 N., R.34 W., Wadena County, at culvert on county road, 1.6 miles west of Nimrod, Minn.	-	-	10- 3-74 7-29-75	.34 .10
*Cat River	Crow Wing River	Lat 46°37'46", long 94°53'04", in NW¼NW¼ sec.5, T.136 N., R.33 W., Wadena County, at bridge on County Highway 26 at Nimrod, Minn., 0.5 mile upstream from mouth.	-	-	10- 4-74 7-29-75	13.3 12.4
Little Swamp Creek	Crow Wing River	SW¼SW¼ sec.34, T.137 N., R.33 W., Wadena County, at bridge on County Highway 139, 0.9 mile upstream from mouth, and 1.8 miles southeast of Nimrod, Minn.	-	-	10- 4-74 7-29-75	.77 0
Beaver Creek	Crow Wing River	NE¼NW¼ sec.36, T.137 N., R.33 W., Wadena County, at bridge on County Highway 12, 4.8 miles north of Oylen, Minn.	-	-	7-29-75	1.86
Beaver Creek tributary	Beaver Creek	NW¼NE¼ sec.35, T.137 N., R.33 W., Wadena County, at culvert on County Highway 12, 3.2 miles east of Nimrod, Minn.	-	-	7-29-75	.14
Beaver Creek	Crow Wing River	SE¼SE¼ sec.3, T.136 N., R.33 W., Wadena County, at bridge on County Highway 139, 0.7 mile upstream from mouth, and 3.2 miles southeast of Nimrod, Minn.	-	-	10- 4-74 7-29-75	3.00 2.52
Crow Wing River tributary	Crow Wing River	SE¼SW¼ sec.2, T.136 N., R.33 W., Wadena County, at culvert on County Highway 139, 2.9 miles north of Oylen, and 13 miles east of Sebeka, Minn.	-	-	10- 4-74 7-29-75	.03 .08

* Miscellaneous water-quality data available at this site also.
c At site of crest-stage partial-record station.

Discharge measurements made in the Crow Wing River basin, Minn., during water year 1975--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements Date	Measurements Discharge (cfs)
Crow Wing River tributary	Crow Wing River	NE¼NE¼ sec.22, T.136 N., R.33 W., Wadena County, at culvert on County Highway 138, 0.4 mile upstream from mouth, and 1.4 miles northwest of Oylen, Minn.	-	-	7-29-75	.17
Crow Wing River tributary	Crow Wing River	NW¼NW¼ sec.24, T.136 N., R.33 W., Wadena County, at culvert on County Highway 30, 0.8 mile north of Oylen, and 5 miles west of Poplar, Minn.	-	-	10- 4-74 7-29-75	.40 .31
Crow Wing River tributary	Crow Wing River	SW¼SW¼ sec.24, T.136 N., R.33 W., Wadena County, at culvert on County Highway 30, at Oylen, Minn.	-	-	10- 4-74 7-29-75	.51 .67
Crow Wing River	Mississippi River	SW¼NE¼ sec.14, T.135 N., R.33 W., Wadena County, at bridge on County Highway 7, 4.7 miles south of Oylen, and 17 miles northeast of Wadena, Minn.	-	-	10- 4-74 7-30-75	348 437
Farnham Creek	Crow Wing River	SE¼SW¼ sec.16, T.136 N., R.32 W., Cass County, at culvert on County Highway 23, 3.3 miles east of Oylen, Minn.	-	-	7-29-75	3.47
*Farnham Creek	Crow Wing River	Lat 46°30'27", long 94°47'34", in SE¼NW¼ sec.13, T.135 N., R.33 W., Wadena County, at bridge on County Highway 30, 0.5 mile upstream from mouth, and 12 miles northeast of Aldrich, Minn.	-	-	10- 4-74 7-30-75	10.2 12.7
Leaf River	Crow Wing River	NE¼NW¼ sec.30, T.135 N., R.33 W., Wadena County, at bridge on County Highway 26, 0.5 mile upstream from Redeye River, and 2.6 miles north of Central, Minn.	-	-	10- 5-74 7-30-75	95.6 93.2
Redeye River	Leaf River	Lat 46°37'44", long 95°05'42", in NE¼NE¼ sec.4, T.136 N., R.35 W., Wadena County, at bridge on U.S. Highway 71, at Sebeka, Minn.	138	1968-71, 1973	b7-30-75	16.3
*Redeye River	Leaf River	Lat 46°37'48", long 95°00'26", in NW¼NW¼ sec.5, T.136 N., R.34 W., Wadena County, at bridge on State Highway 227, 3.9 miles east of Sebeka, and 6.1 miles west of Nimrod, Minn.	-	-	10- 4-74 7-30-75	16.5 17.4
Redeye River tributary	Redeye River	NE¼NE¼ sec.22, T.136 N., R.34 W., Wadena County, at culvert on county road, 0.3 mile upstream from mouth, and 4.9 miles southwest of Nimrod, Minn.	-	-	10- 4-74	.03
Redeye River	Leaf River	SE¼SE¼ sec.22, T.136 N., R.34 W., Wadena County, at bridge on County Highway 9, 6 miles southwest of Nimrod, and 13 miles northeast of Wadena, Minn.	-	-	10- 4-74 7-30-75	20.8 24.2
Redeye River tributary	Redeye River	SW¼NW¼ sec.12, T.135 N., R.34 W., Wadena County, at culvert on county road near mouth, 12 miles northeast of Wadena, Minn.	-	-	10- 5-74	.44
Hay Creek	Redeye River	SE¼NE¼ sec.14, T.135 N., R.34 W., Wadena County, at culvert on county road, 1.0 mile upstream from mouth, and 9.2 miles north of Aldrich, Minn.	-	-	10- 5-74 7-30-75	.63 .21
Redeye River	Leaf River	Lat 46°29'58", long 94°54'30", on line between secs.13 and 24, T.135 N., R.34 W., Wadena County, at bridge on county Highway 7, 1.5 miles upstream from mouth, 3.5 miles north of Central, and 8.5 miles north of Aldrich, Minn.	221	1964-66, 1968-71, 1973-74	b10- 4-74 b7-30-75	25.8 35.7
*Leaf River	Crow Wing River	Lat 46°27'25", long 94°50'29", in SW¼SW¼ sec.34, T.135 N., R.33 W., Wadena County, at bridge on County Highway 29, 2.3 miles upstream from mouth, and 7 miles northeast of Aldrich, Minn.	860	1968, 1970-74	b10- 4-74 b7-31-75	118 120

* Miscellaneous water-quality data available at this site also.
b Also published under measurements made at low-flow partial-record stations.

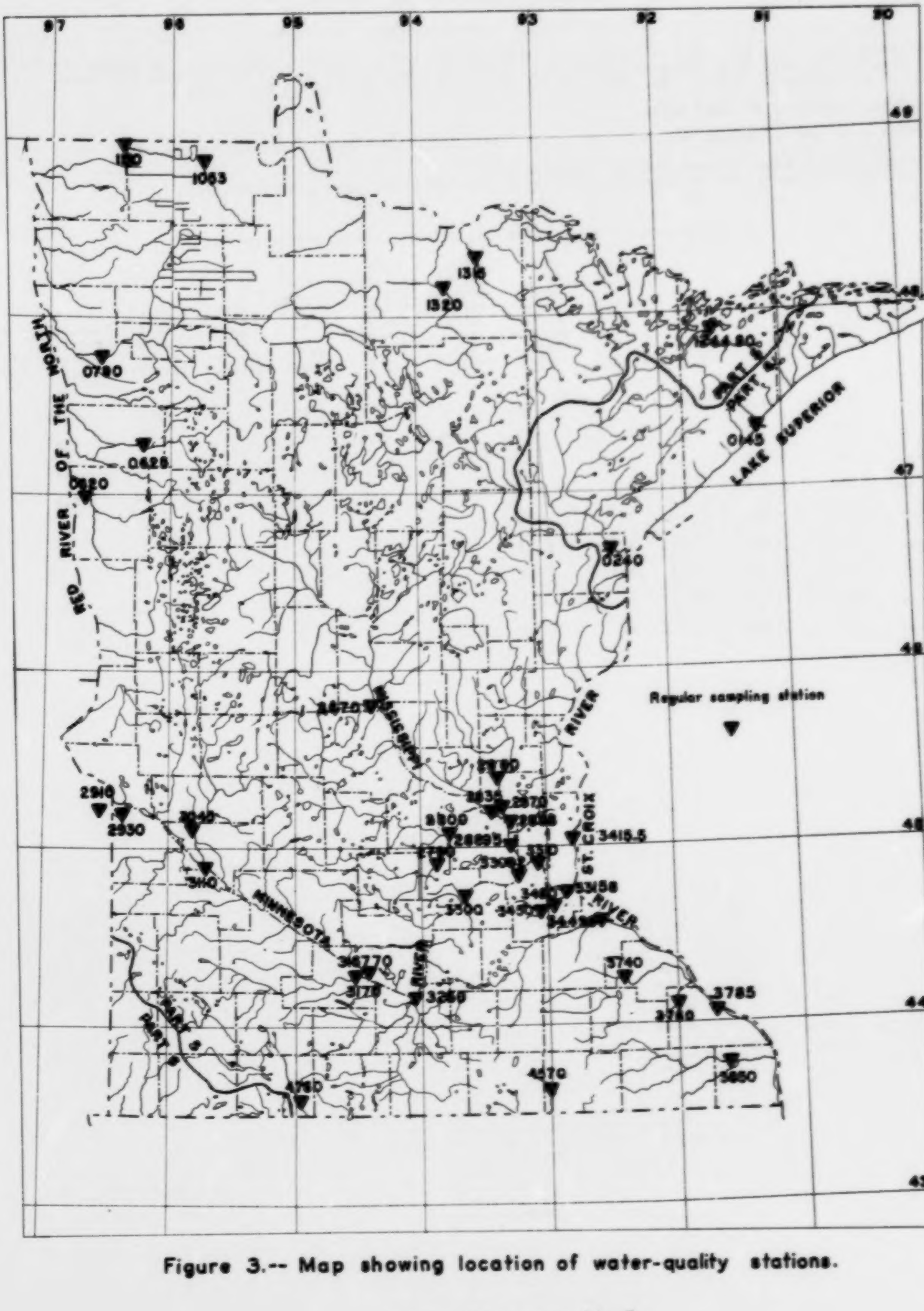
Discharge measurements made in the Crow Wing River basin, Minn., during water year 1975--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Leaf River tributary	Leaf River	SW¼NE¼ sec.10, T.134 N., R.33 W., Wadena County, at bridge on county road, 0.6 mile upstream from mouth, and 6.7 miles northeast of Aldrich, Minn.	-	-	10- 5-74 7-30-75	4.27 2.72
Partridge River	Crow Wing River	Lat 46°25'02", long 94°50'28", in NW¼SW¼ sec.15, T.134 N., R.33 W., Wadena County, at bridge on County Highway 29, 0.7 mile upstream from mouth, and 5.5 miles northeast of Aldrich, Minn.	93.5	1964-71, 1973-74	b10- 5-74 b7-30-75	5.64 5.89
Hayden Creek	Crow Wing River	NW¼NW¼ sec.31, T.134 N., R.32 W., Wadena County, at culvert on county road, 0.8 mile upstream from mouth, and 2.5 miles northeast of Staples, Minn.	-	-	10- 5-74 7-30-75	2.76 3.02
*Swan Creek	Crow Wing River	Lat 46°24'08", long 94°45'36", in NE¼SE¼ sec.19, T.134 N., R.32 W., Cass County, at culvert on County Highway 32, 1.4 miles upstream from mouth, 4 miles northeast of Staples, and 9 miles northeast of Aldrich, Minn.	-	-	10- 4-74 7-30-75	3.16 9.90
*Crow Wing River	Mississippi River	Lat 46°22'06", long 94°43'50", in SE¼SW¼ sec.33, T.134 N., R.32 W., Cass County, at bridge on County Highway 33, 2.1 miles east of Staples, Minn.	-	-	10- 4-74 7-30-75	513 582

* Miscellaneous water-quality data available at this site also.

b Also published under measurements made at low-flow partial-record stations.

SECTION 2. WATER QUALITY RECORDS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0628
0520
1244.50
0145
0240
RED RIVER OF THE NORTH
LAKE SUPERIOR
PART 4
PART 5
Regular sampling station
2870
MISSISSIPPI
RIVER
2780
2835
2870
3300
28895
2790
3310
3415.5
ST. CROIX
RIVER
3500
3458
3440
3450
2910
2930
3040
3110
MINNESOTA
RIVER
3170
3250
3740
3780
3785
3850
4570
4750
PART 5
PART 6

Figure 3.-- Map showing location of water-quality stations.

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04014500 BAPTISM RIVER NEAR BEAVER BAY, MINN.

LOCATION.--Lat 47°20'15", long 91°12'00", in SE¼NE¼ sec.15, T.56 N., R.7 W., Lake County, at gaging station on right bank 30 ft (9 m) upstream from bridge on U.S. Highway 61, 0.2 mi (0.3 km) upstream from mouth, 4 mi (6 km) northeast of Silver Bay, and 7 mi (11 km) northeast of village of Beaver Bay.

DRAINAGE AREA.--140 mi² (363 km²).

PERIOD OF RECORD.--Chemical analyses: Water year 1968, 1970, 1974 (partial-record station), October 1974 to September 1974.
Water temperatures: October 1970 to September 1973.
Sediment: December 1967 to September 1970, water year 1975 (partial-record station).

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPER- ATURE (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L) (70301)	DIS- SOLVED SOLIDS (TONS PER DAY) (70302)	TUR- BID- ITY (JTU) (00070)	DIS- SOLVED OXYGEN (MG/L) (00300)	CARBON DIOXIDE (CO2) (MG/L) (00405)	PH (UNITS) (00400)
OCT. 31...	1030	15.0	9.0	76	88	77	55	15.8	2	11.2	.8	7.9
DEC. 10...	1405	.0	.5	28	115	96	69	7.28	1	--	1.8	7.6
JAN. 21...	1730	<-5.0	.5	58	90	86	60	13.5	5	--	1.4	7.6
MAR. 04...	1300	<.0	.0	28	102	83	66	6.32	2	--	2.3	7.5
APR. 08...	1140	2.0	.0	38	100	78	64	8.09	1	--	.5	8.1
MAY 28...	1215	14.0	15.0	133	77	67	43	24.1	1	--	.5	8.0
JULY 09...	1200	--	18.0	163	60	89	43	39.2	2	--	2.2	7.3
AUG. 19...	1200	16.5	18.0	5.3	116	80	69	1.14	3	--	.5	8.3
SEP. 30...	1130	10.0	10.5	59	82	89	54	14.2	1	--	5.1	7.8

OCT. 31, 1974
1030 HOURS

IDENTIFICATION OF PHYTOPLANKTON

1,300 CELLS/ML

_ORGANISM__NAME_____________	_COMMON__NAME______	CELLS/ML	PER_CENT
CHLOROPHYTA	GREEN ALGAE		
.CHLOROPHYCEAE			
..ZYGNEMATALES			
...ZYGNEMATACEAE			
....MOUGEOTIA		160	12
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..PENNALES	PENNATE		
...CYMBELLACEAE			
....CYMBELLA		79	6
...FRAGILARIACEAE			
D ....SYNEDRA		860	65
...TABELLARIACEAE			
D ....TABELLARIA		240	18

NOTE: D - DOMINANT ORGANISM; GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.523
CLASS 0.523
ORDER 0.523
FAMILY 1.452
GENERA 1.452

04014500 BAPTISM RIVER NEAR BEAVER BAY, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	DIS- SOLVED CAL- CIUM (CA) (MG/L) (00915)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L) (00925)	DIS- SOLVED SODIUM (NA) (MG/L) (00930)	DIS- SOLVED PO- TAS- SIUM (K) (MG/L) (00935)	ALKA- LINITY AS CACO3 (MG/L) (00410)	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940)	DIS- SOLVED SULFATE (SO4) (MG/L) (00945)	DIS- SOLVED FLUO- RIDE (F) (MG/L) (00950)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL NITRO- GEN (N) (MG/L) (00600)
OCT. 31...	10	3.0	2.9	.5	33	2.6	6.5	.2	--	.17	--
DEC. 10...	13	3.9	4.6	.5	37	3.2	8.4	.2	.32	.28	.60
JAN. 21...	9.4	2.8	2.6	.6	30	4.7	7.8	.2	.55	.53	1.1
MAR. 04...	11	3.9	3.4	.3	38	3.4	7.3	.2	.39	.35	.74
APR. 08...	12	4.0	3.8	.7	34	3.5	6.2	.4	.28	.43	.71
MAY 28...	8.4	2.6	2.3	.6	25	1.9	5.7	.2	.63	.04	.67
JULY 09...	8.7	2.7	1.9	.4	22	1.6	6.0	.2	.96	.07	1.0
AUG. 19...	12	4.7	4.6	.5	47	5.1	5.1	.2	.41	.01	.42
SEP. 30...	11	2.6	2.5	.4	26	3.2	9.4	.2	1.5	.02	1.5

DATE	TIME	DIS- SOLVED ARSENIC (AS) (UG/L) (01000)	SUS- PENDED ARSENIC (AS) (UG/L) (01001)	TOTAL ARSENIC (AS) (UG/L) (01002)	DIS- SOLVED CAD- MIUM (CD) (UG/L) (01025)	SUS- PENDED CAD- MIUM (CD) (UG/L) (01026)	TOTAL CAD- MIUM (CD) (UG/L) (01027)	DIS- SOLVED CHRO- MIUM (CR) (UG/L) (01030)	SUS- PENDED CHRO- MIUM (CR) (UG/L) (01031)	TOTAL CHRO- MIUM (CR) (UG/L) (01034)	DIS- SOLVED COBALT (CO) (UG/L) (01035)	SUS- PENDED COBALT (CO) (UG/L) (01036)
OCT. 31...	1030	0	2	2	0	<10	<10	0	0	0	0	<50
JAN. 21...	1730	1	0	1	1	9	10	10	0	10	1	<49
MAY 28...	1215	0	0	0	1	<9	<10	0	0	0	1	<49
AUG. 19...	1200	0	0	0	0	<10	<10	10	0	10	0	<50

DEC. 10, 1974
1405 HOURS

IDENTIFICATION OF PHYTOPLANKTON

180 CELLS/ML

_ORGANISM__NAME_______________	_COMMON__NAME______	CELLS/ML	PER_CENT
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..CENTRALES	CENTRIC		
...COSCINODISCACEAE			
D ....CYCLOTELLA		64	37
..PENNALES	PENNATE		
...ACHNANTHACEAE			
D ....ACHNANTHES		70	40
...FRAGILARIACEAE			
D ....SYNEDRA		29	17
...TABELLARIACEAE			
....TABELLARIA		6	3
.CHRYSOPHYCEAE	YELLOW-BROWN ALGAE		
..CHRYSOMONADALES			
...OCHROMONADACEAE			
....DINOBRYON		6	3

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
CLASS 0.211
ORDER 1.136
FAMILY 1.817
GENERA 1.817

04014500 BAPTISM RIVER NEAR BEAVER BAY, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	FECAL COLI-FORM (COL. PER 100 ML) (31616)	STREP-TOCOCCI (COL-ONIES PER 100 ML) (31679)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	PER-CENT SATUR-ATION (00301)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	PERCENT SODIUM (00932)	TOTAL NITRO-GEN (NO3) (MG/L) (71887)
OCT.											
31...	.03	9.6	92	32	.10	100	37	5	.2	16	--
DEC.											
10...	.00	13	4	2	.13	--	49	12	.3	17	2.7
JAN.											
21...	.01	14	7	3	.12	--	35	5	.2	14	4.8
MAR.											
04...	.02	14	2	0	.11	--	44	6	.2	14	3.3
APR.											
08...	.02	13	3	2	.11	--	46	12	.2	15	3.1
MAY											
28...	.01	6.5	28	26	.09	--	32	7	.2	13	3.0
JULY											
09...	.01	8.3	34	57	.12	--	33	11	.1	11	4.6
AUG.											
19...	.00	8.4	9	74	.11	--	49	3	.3	17	1.9
SEP.											
30...	.01	9.4	11	8	.12	--	38	12	.2	12	6.7

DATE	TOTAL COBALT (CO) (UG/L) (01037)	DIS-SOLVED COPPER (CU) (UG/L) (01040)	SUS-PENDED COPPER (CU) (UG/L) (01041)	TOTAL COPPER (CU) (UG/L) (01042)	DIS-SOLVED IRON (FE) (UG/L) (01046)	TOTAL IRON (FE) (UG/L) (01045)	DIS-SOLVED LEAD (PB) (UG/L) (01049)	SUS-PENDED LEAD (PB) (UG/L) (01050)	TOTAL LEAD (PB) (UG/L) (01051)	DIS-SOLVED MAN-GANESE (MN) (UG/L) (01056)	SUS-PENDED MAN-GANESE (MN) (UG/L) (01054)
OCT.											
31...	<50	1	<9	<10	180	270	2	<98	<100	0	0
JAN.											
21...	<50	1	110	110	230	590	13	<87	<100	0	20
MAY											
28...	<50	3	7	10	260	400	2	<98	<100	0	40
AUG.											
19...	<50	0	<10	<10	80	90	0	<100	<100	0	0

JAN. 21. 1975
1730 HOURS

IDENTIFICATION OF PHYTOPLANKTON

100 CELLS/ML

	_ORGANISM__NAME_______________	_COMMON__NAME______	CELLS/ML	PER_CENT
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
	....CYCLOTELLA		9	8
	..PENNALES	PENNATE		
	...ACHNANTHACEAE			
D	....ACHNANTHES		61	58
	...CYMBELLACEAE			
	....CYMBELLA		9	8
	...FRAGILARIACEAE			
D	....SYNEDRA		17	17
	...NITZSCHIACEAE			
	....NITZSCHIA		9	8

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES. BASED ON ACTUAL COUNTS:
ORDER 0.414
FAMILY 1.781
GENERA 1.781

04014500 BAPTISM RIVER NEAR BEAVER BAY, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	TEMPER-ATURE (DEG C)	INSTAN-TANEOUS DIS-CHARGE (CFS)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .062 MM
OCT. 31...	1020	9.0	76	10	2.1	--
DEC. 10...	1605	.5	28	17	1.3	--
JAN. 21...	1730	.5	58	5	.80	--
MAR. 04...	1315	.5	28	3	.20	--
APR. 08...	1130	.0	38	3	.30	--
MAY 28...	1200	15.0	133	4	1.4	--
JULY 09...	1200	18.0	163	16	7.0	--
AUG. 19...	1050	18.0	9.3	16	.20	82
SEP. 30...	1130	10.5	59	13	2.1	72

DATE	TOTAL MAN-GANESE (MN) (UG/L) (01055)	DIS-SOLVED MERCURY (HG) (UG/L) (71890)	SUS-PENDED MERCURY (HG) (UG/L) (71895)	TOTAL MERCURY (HG) (UG/L) (71900)	DIS-SOLVED SELE-NIUM (SE) (UG/L) (01145)	SUS-PENDED SELE-NIUM (SE) (UG/L) (01146)	TOTAL SELE-NIUM (SE) (UG/L) (01147)	DIS-SOLVED ZINC (ZN) (UG/L) (01090)	SUS-PENDED ZINC (ZN) (UG/L) (01091)	TOTAL ZINC (ZN) (UG/L) (01092)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)
OCT. 31...	0	.0	.0	.0	0	0	0	10	260	270	13
JAN. 21...	20	.0	.3	.3	0	0	0	7	30	40	13
MAY 28...	60	1.1	.0	1.1	0	0	0	6	30	40	10
AUG. 19...	0	.0	.1	.1	0	0	0	10	10	20	6.1

MAR. 4, 1975
1300 HOURS

IDENTIFICATION OF PHYTOPLANKTON

140 CELLS/ML

_ORGANISM__NAME______________	_COMMON__NAME______	CELLS/ML	PER_CENT
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..CENTRALES	CENTRIC		
...COSCINODISCACEAE			
....CYCLOTELLA		9	7
..PENNALES	PENNATE		
...ACHNANTHACEAE			
D ....ACHNANTHES		110	80
...NAVICULACEAE	NAVICULOID		
....NAVICULA		9	7
...NITZSCHIACEAE			
....NITZSCHIA		9	7

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
ORDER 0.353
FAMILY 1.039
GENERA 1.039

04014500 BAPTISM RIVER NEAR BEAVER BAY, MINN.--Continued

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                              APR. 8, 1975
                               1140 HOURS

                      IDENTIFICATION OF PHYTOPLANKTON

                              130 CELLS/ML

   _ORGANISM__NAME______________   _COMMON__NAME______  CELLS/ML     PER_CENT

   CHRYSOPHYTA
   .BACILLARIOPHYCEAE              DIATOMS
   ..PENNALES                      PENNATE
   ...ACHNANTHACEAE
 D ....ACHNANTHES                                          48            38
   ...DIATOMACEAE
 D ....DIATOMA                                             29            23
   ...FRAGILARIACEAE
   ....FRAGILARIA                                          10             8
 D ....SYNEDRA                                             19            15
   ...GOMPHONEMATACEAE
   ....GOMPHONEMA                                          10             8
   ...TABELLARIACEAE
   ....TABELLARIA                                          10             8

 NOTE: D = DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
       ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
       DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
                          FAMILY 2.076
                          GENERA 2.288


                              MAY 28, 1975
                               1215 HOURS

                      IDENTIFICATION OF PHYTOPLANKTON

                              550 CELLS/ML

   _ORGANISM__NAME______________   _COMMON__NAME______  CELLS/ML     PER_CENT

   CHRYSOPHYTA
   .BACILLARIOPHYCEAE              DIATOMS
   ..PENNALES                      PENNATE
   ...ACHNANTHACEAE
 D ....ACHNANTHES                                         340            62
   ...CYMBELLACEAE
   ....CYMBELLA                                            26             5
   ...FRAGILARIACEAE
   ....SYNEDRA                                             52            10
   ...GOMPHONEMATACEAE
   ....GOMPHONEMA                                          26             5
   ...NAVICULACEAE                 NAVICULOID
   ....NAVICULA                                            26             5
   ...NITZSCHIACEAE
   ....NITZSCHIA                                           52            10
   ...TABELLARIACEAE
   ....TABELLARIA                                          26             5

 NOTE: D = DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
       ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
       DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
                          FAMILY 1.911
                          GENERA 1.911
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QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

PERIPHYTON

Date	Length of exposure (days)	Biomass (g/m²) Dry weight	Biomass (g/m²) Ash weight	Chlorophyll a (mg/m²)	Chlorophyll b (mg/m²)	Biomass pigment ratio	Sampling method
Mar 04	42	64	64	0.0	0.0	0.0	Polyethylene strip
Aug 18	41	1.6	1.5	2.0	0.5	50	Polyethylene strip

04014500 BAPTISM RIVER NEAR BEAVER BAY, MINN.--Continued

AUG. 19, 1975
1200 HOURS
IDENTIFICATION OF PHYTOPLANKTON
450 CELLS/ML

	_ORGANISM__NAME	_COMMON__NAME	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
	....ANKISTRODESMUS		31	7
	...SCENEDESMACEAE			
	....SCENEDESMUS		42	9
	..TETRASPORALES			
	...PALMELLACEAE			
	....GLOEOCYSTIS		10	2
	..ZYGNEMATALES			
	...DESMIDIACEAE	PLACODERM DESMIDS		
L	....COSMARIUM			0
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..PENNALES	PENNATE		
	...ACHNANTHACEAE			
D	....ACHNANTHES		170	37
	...CYMBELLACEAE			
	....CYMBELLA		21	5
	...GOMPHONEMATACEAE			
	....GOMPHONEMA		42	9
	...NAVICULACEAE	NAVICULOID		
	....NAVICULA		31	7
	...NITZSCHIACEAE			
	....NITZSCHIA		21	5
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..CHROOCOCCALES	COCCOID		
	...CHROOCOCCACEAE			
D	....ANACYSTIS		83	19

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
L - LESS THEN 1%: MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 1.324
CLASS 1.324
ORDER 1.425
FAMILY 2.693
GENERA 2.693

SEP. 30, 1975
1130 HOURS
IDENTIFICATION OF PHYTOPLANKTON
760 CELLS/ML

	_ORGANISM__NAME	_COMMON__NAME	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
	....ANKISTRODESMUS		20	3
	...SCENEDESMACEAE			
D	....SCENEDESMUS		120	16
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..PENNALES	PENNATE		
	...ACHNANTHACEAE			
	....ACHNANTHES		82	11
	...CYMBELLACEAE			
	....CYMBELLA		20	3
	...FRAGILARIACEAE			
	....FRAGILARIA		61	8
D	....SYNEDRA		120	16
	...GOMPHONEMATACEAE			
L	....GOMPHONEMA			0
	...NAVICULACEAE	NAVICULOID		
	....NAVICULA		82	11
	...NITZSCHIACEAE			
	....NITZSCHIA		82	11
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..CHROOCOCCALES	COCCOID		
	...CHROOCOCCACEAE			
D	....AGMENELLUM		160	22

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
L - LESS THEN 1%: MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 1.378
CLASS 1.378
ORDER 1.378
FAMILY 2.722
GENERA 2.945

04024000 ST. LOUIS RIVER AT SCANLON, MINN.

LOCATION.--Lat 46°42'12", long 92°25'07", in NW¼ sec.30, T.49 N., R.16 W., St. Louis County, at gaging station on right bank 25 ft (8 m) downstream from lower bridge on U.S. Highway 61 at Scanlon, 0.6 mi (1.0 km) downstream from Minnesota Power and Light Co., powerplant, 3 mi (5 km) upstream from Thomson Reservoir, and 3.2 mi (5.1 km) upstream from Midway River.

DRAINAGE AREA.--3,430 mi² (8,880 km²), approximately.

PERIOD OF RECORD.--Chemical analyses: July 1958 to September 1959, July 1960 to September 1966, water years 1968-74 (partial-record station), October 1974 to September 1975.
Sediment records: Water year 1975 (partial-record station).

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPER-ATURE (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	INSTAN-TANEOUS DIS-CHARGE (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	TUR-BID-ITY (JTU) (00070)	COLOR (PLAT-INUM-COBALT UNITS) (00080)	DIS-SOLVED OXYGEN (MG/L) (00300)	CARBON DIOXIDE (CO2) (MG/L) (00405)
OCT.												
30...	1100	12.0	9.0	1060	240	165	124	472	6	--	8.3	6.1
DEC.												
09...	1500	6.5	.5	877	220	181	121	429	5	--	--	4.8
JAN.												
21...	1200	<-5.0	.5	1450	199	151	109	591	7	80	--	6.4
MAR.												
03...	1745	4.0	.0	1320	230	140	109	499	3	--	--	6.7
APR.												
07...	1515	6.0	1.5	1450	235	160	133	626	6	--	--	9.9
MAY												
27...	1730	20.5	20.5	2270	165	142	69	870	4	100	--	3.1
JULY												
08...	1600	--	22.5	6580	115	127	72	2260	19	--	--	.1
AUG.												
18...	1545	18.5	22.0	881	205	159	112	378	24	130	--	6.9
SEP.												
29...	1630	26.5	14.0	1100	244	171	127	508	4	--	--	5.6

DATE	TIME	TEMPER-ATURE (DEG C)	INSTAN-TANEOUS DIS-CHARGE (CFS)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .062 MM
OCT.						
30...	1030	9.0	1070	5	14	--
DEC.						
09...	1500	.5	877	16	38	--
JAN.						
21...	1200	.5	1450	8	31	--
MAR.						
03...	1715	.5	1330	5	18	--
APR.						
07...	1505	1.5	1450	5	20	--
MAY						
27...	1655	20.5	2270	19	116	--
JULY						
08...	1600	22.5	6580	28	497	--
AUG.						
18...	1440	22.0	881	216	514	88
SEP.						
29...	1630	14.0	1100	15	45	81

04024000 ST. LOUIS RIVER AT SCANLON, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	PH (UNITS) (00400)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	ALKA-LINITY AS CACO3 (MG/L) (00410)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L) (00625)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL NITRO-GEN (N) (MG/L) (00600)
OCT. 30...	7.3	23	6.3	13	1.5	62	16	23	.2	.78	.01	.79
DEC. 09...	7.4	22	7.6	12	1.6	62	15	18	.1	.67	.01	.68
JAN. 21...	7.3	18	7.0	10	1.1	66	12	13	.2	.89	.16	1.1
MAR. 03...	7.3	17	7.6	10	1.7	66	11	12	.1	.62	.15	.77
APR. 07...	7.2	22	9.7	11	2.0	80	14	16	.2	.63	.23	.86
MAY 27...	7.5	15	6.1	8.5	1.5	50	9.2	12	.1	1.2	.00	1.2
JULY 08...	9.2	14	5.7	3.2	1.0	43	3.4	10	.1	1.6	.12	1.7
AUG. 18...	7.2	18	6.9	12	1.3	56	16	16	.1	.94	.01	.95
SEP. 29...	7.4	23	8.0	12	1.5	72	13	20	.2	1.6	.02	1.6

OCT. 30, 1974
1100 HOURS

IDENTIFICATION OF PHYTOPLANKTON

1,800 CELLS/ML

	_ORGANISM__NAME_______________	_COMMON__NAME_______	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...SCENEDESMACEAE			
	....SCENEDESMUS		130	7
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
D	....CYCLOTELLA		290	16
	....MELOSIRA		220	12
	..PENNALES	PENNATE		
	...FRAGILARIACEAE			
	....ASTERIONELLA		64	4
	....SYNEDRA		32	2
	...NAVICULACEAE	NAVICULOID		
	....NAVICULA		32	2
	...NITZSCHIACEAE			
	....NITZSCHIA		64	4
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..CHROOCOCCALES	COCCOID		
	...CHROOCOCCACEAE			
	....ANACYSTIS		64	4
	..OSCILLATORIALES	FILAMENTOUS		
	...NOSTOCACEAE			
D	....ANABAENA		390	21
	...OSCILLATORIACEAE			
D	....OSCILLATORIA		510	29

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 1.284
CLASS 1.284
ORDER 1.805
FAMILY 2.454
GENERA 2.786

04024000 ST. LOUIS RIVER AT SCANLON, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TOTAL PHOS- PHORUS (P) (MG/L) (00665)	DIS- SOLVED SILICA (SIO2) (MG/L) (00955)	FECAL COLI- FORM (COL. PER 100 ML) (31616)	STREP- TOCOCCI (COL- ONIES PER 100 ML) (31679)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303)	PER- CENT SATUR- ATION (00301)	HARD- NESS (CA,MG) (MG/L) (00900)	NON- CAR- BONATE HARD- NESS (MG/L) (00902)	SODIUM AD- SORP- TION RATIO (00931)	PERCENT SODIUM (00932)	TOTAL NITRO- GEN (NO3) (MG/L) (71887)
OCT.											
30...	.04	3.7	420	450	.22	72	83	21	.6	25	3.5
DEC.											
09...	.04	7.0	580	120	.25	--	86	24	.6	23	3.0
JAN.											
21...	.05	7.3	400	360	.21	--	78	8	.5	22	4.6
MAR.											
03...	.04	8.3	430	75	.19	--	74	6	.5	22	3.4
APR.											
07...	.07	9.8	250	120	.22	--	95	14	.5	20	3.8
MAY											
27...	.03	5.3	--	590	.19	--	63	13	.5	22	5.3
JULY											
08...	.06	8.6	800	79	.17	--	58	15	.2	10	7.6
AUG.											
18...	.08	7.0	--	49	.22	--	73	18	.6	26	4.2
SEP.											
29...	.05	5.6	440	32	.23	--	90	18	.6	22	7.2

DEC. 9, 1974
1500 HOURS

IDENTIFICATION OF PHYTOPLANKTON

15,000 CELLS/ML

_ORGANISM__NAME_______________	_COMMON__NAME_______	CELLS/ML	PER_CENT
CYANOPHYTA	BLUE-GREEN ALGAE		
.MYXOPHYCEAE			
..OSCILLATORIALES	FILAMENTOUS		
...OSCILLATORIACEAE			
D ....LYNGBYA		15,000	100

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE

JAN. 21, 1975
1200 HOURS

IDENTIFICATION OF PHYTOPLANKTON

450 CELLS/ML

_ORGANISM__NAME_______________	_COMMON__NAME_______	CELLS/ML	PER_CENT
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..CENTRALES	CENTRIC		
...COSCINODISCACEAE			
....CYCLOTELLA		31	7
..PENNALES	PENNATE		
...ACHNANTHACEAE			
....ACHNANTHES		21	5
...NAVICULACEAE	NAVICULOID		
....NAVICULA		10	2
...NITZSCHIACEAE			
....NITZSCHIA		21	5
CYANOPHYTA	BLUE-GREEN ALGAE		
.MYXOPHYCEAE			
..OSCILLATORIALES	FILAMENTOUS		
...OSCILLATORIACEAE			
D ....OSCILLATORIA		360	81

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.693
CLASS 0.693
ORDER 0.871
FAMILY 1.048
GENERA 1.048

04024000 ST. LOUIS RIVER AT SCANLON, MINN.--Continued

MAR. 3, 1975
1745 HOURS

IDENTIFICATION OF PHYTOPLANKTON

360 CELLS/ML

	_ORGANISM__NAME	_COMMON__NAME	CELLS/ML	PER_CENT
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..PENNALES	PENNATE		
	...ACHNANTHACEAE			
	....ACHNANTHES		23	6
	...DIATOMACEAE			
	....DIATOMA		23	6
	...FRAGILARIACEAE			
D	....FRAGILARIA		270	75
	....SYNEDRA		23	6
	...TABELLARIACEAE			
	....TABELLARIA		23	6

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
FAMILY 0.993
GENERA 1.311

APR. 7, 1975
1515 HOURS

IDENTIFICATION OF PHYTOPLANKTON

3,800 CELLS/ML

	_ORGANISM__NAME	_COMMON__NAME	CELLS/ML	PER_CENT
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..PENNALES	PENNATE		
	...ACHNANTHACEAE			
	....ACHNANTHES		44	1
	...DIATOMACEAE			
	....DIATOMA		180	5
	...FRAGILARIACEAE			
	....ASTERIONELLA		44	1
	....SYNEDRA		44	1
	...NAVICULACEAE	NAVICULOID		
	....NAVICULA		88	2
	...NITZSCHIACEAE			
	....NITZSCHIA		130	4
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..OSCILLATORIALES	FILAMENTOUS		
	...OSCILLATORIACEAE			
D	....LYNGBYA		3,200	86

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.587
CLASS 0.587
ORDER 0.587
FAMILY 0.896
GENERA 0.920

STREAMS TRIBUTARY TO LAKE SUPERIOR

04024000 ST. LOUIS RIVER AT SCANLON, MINN.--Continued

MAY 27, 1975
1730 HOURS

IDENTIFICATION OF PHYTOPLANKTON

2,500 CELLS/ML

_ORGANISM__NAME_______________	_COMMON__NAME______	CELLS/ML	PER_CENT
CHLOROPHYTA	GREEN ALGAE		
.CHLOROPHYCEAE			
..CHLOROCOCCALES			
...OOCYSTACEAE			
....KIRCHNERIELLA		110	4
...SCENEDESMACEAE			
D ....SCENEDESMUS		430	17
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..CENTRALES	CENTRIC		
...COSCINODISCACEAE			
D ....CYCLOTELLA		1,500	61
..PENNALES	PENNATE		
...ACHNANTHACEAE			
....COCCONEIS		53	2
...FRAGILARIACEAE			
....SYNEDRA		110	4
...NITZSCHIACEAE			
....NITZSCHIA		210	9
EUGLENOPHYTA	EUGLENOIDS		
.EUGLENOPHYCEAE			
..EUGLENALES			
...EUGLENACEAE			
....TRACHELOMONAS		53	2

NOTE: D = DOMINANT ORGANISM, GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.899
CLASS 0.899
ORDER 1.448
FAMILY 1.815
GENERA 1.815

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	DIS-SOLVED ARSENIC (AS) (UG/L) (01000)	SUS-PENDED ARSENIC (AS) (UG/L) (01001)	TOTAL ARSENIC (AS) (UG/L) (01002)	DIS-SOLVED CAD-MIUM (CD) (UG/L) (01025)	SUS-PENDED CAD-MIUM (CD) (UG/L) (01026)	TOTAL CAD-MIUM (CD) (UG/L) (01027)	DIS-SOLVED CHRO-MIUM (CR) (UG/L) (01030)	SUS-PENDED CHRO-MIUM (CR) (UG/L) (01031)	TOTAL CHRO-MIUM (CR) (UG/L) (01034)	DIS-SOLVED COBALT (CO) (UG/L) (01035)	SUS-PENDED COBALT (CO) (UG/L) (01036)
OCT.												
30...	1100	2	0	2	1	<9	<10	0	0	0	1	<49
JAN.												
21...	1200	1	0	1	1	19	20	10	0	10	1	49
MAY												
27...	1730	0	1	1	0	<10	<10	0	0	0	0	<50
AUG.												
18...	1545	1	0	1	0	<10	<10	0	10	10	0	<50

DATE	TOTAL COBALT (CO) (UG/L) (01037)	DIS-SOLVED COPPER (CU) (UG/L) (01040)	SUS-PENDED COPPER (CU) (UG/L) (01041)	TOTAL COPPER (CU) (UG/L) (01042)	DIS-SOLVED IRON (FE) (UG/L) (01046)	TOTAL IRON (FE) (UG/L) (01045)	DIS-SOLVED LEAD (PB) (UG/L) (01049)	SUS-PENDED LEAD (PB) (UG/L) (01050)	TOTAL LEAD (PB) (UG/L) (01051)	DIS-SOLVED MAN-GANESE (MN) (UG/L) (01056)	SUS-PENDED MAN-GANESE (MN) (UG/L) (01054)
OCT.											
30...	<50	4	<6	<10	500	550	4	<96	<100	40	10
JAN.											
21...	50	2	170	170	400	710	5	95	100	40	20
MAY											
27...	<50	1	9	10	650	1000	1	<99	<100	70	20
AUG.											
18...	<50	2	<8	<10	420	780	0	<100	<100	90	0

04024000 ST. LOUIS RIVER AT SCANLON, MINN.--Continued

AUG. 18, 1975
1545 HOURS

IDENTIFICATION OF PHYTOPLANKTON

24,000 CELLS/ML

	_ORGANISM__NAME_______________	_COMMON__NAME_______	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...MICRACTINIACEAE			
L	....GOLENKINIA			0
L	....MICRACTINIUM			0
	...OOCYSTACEAE			
	....CHODATELLA		550	2
	....DICTYOSPHAERIUM		1,600	7
	...SCENEDESMACEAE			
L	....ACTINASTRUM			0
L	....SCENEDESMUS			0
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
L	....CYCLOTELLA			0
L	....MELOSIRA			0
	..PENNALES	PENNATE		
	...FRAGILARIACEAE			
L	....SYNEDRA			0
	...MERIDIONACEAE			
L	....MERIDION			0
	...NAVICULACEAE	NAVICULOID		
L	....NAVICULA			0
	...NITZSCHIACEAE			
L	....NITZSCHIA			0
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..OSCILLATORIALES	FILAMENTOUS		
	...NOSTOCACEAE			
L	....ANABAENA			0
	...OSCILLATORIACEAE			
D	....OSCILLATORIA		22,000	90

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
L - LESS THEN 1%: MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.494
CLASS 0.494
ORDER 0.494
FAMILY 0.517
GENERA 0.590

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TOTAL MANGANESE (MN) (UG/L) (01055)	DIS-SOLVED MERCURY (HG) (UG/L) (71890)	SUS-PENDED MERCURY (HG) (UG/L) (71895)	TOTAL MERCURY (HG) (UG/L) (71900)	DIS-SOLVED SELENIUM (SE) (UG/L) (01145)	SUS-PENDED SELENIUM (SE) (UG/L) (01146)	TOTAL SELENIUM (SE) (UG/L) (01147)	DIS-SOLVED ZINC (ZN) (UG/L) (01090)	SUS-PENDED ZINC (ZN) (UG/L) (01091)	TOTAL ZINC (ZN) (UG/L) (01092)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)
OCT. 30...	50	.0	.1	.1	0	0	0	80	60	140	3.3
JAN. 21...	60	.0	.0	.0	0	0	0	10	80	90	27
MAY 27...	90	.1	.0	.1	0	0	0	20	50	70	38
AUG. 18...	90	.0	.1	.1	0	0	0	40	0	40	40

04024000 ST. LOUIS RIVER AT SCANLON, MINN.--Continued

SEP. 29, 1975
1630 HOURS

IDENTIFICATION OF PHYTOPLANKTON

5,300 CELLS/ML

	_ORGANISM__NAME_______________	_COMMON__NAME_______	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...SCENEDESMACEAE			
L	....CRUCIGENIA			0
L	....SCENEDESMUS			0
	..VOLVOCALES			
	...CHLAMYDOMONADACEAE			
	....CHLAMYDOMONAS		120	2
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
D	....CYCLOTELLA		900	17
L	....MELOSIRA			0
	..PENNALES	PENNATE		
	...ACHNANTHACEAE			
	....ACHNANTHES		60	1
	...NAVICULACEAE	NAVICULOID		
L	....FRUSTULIA			0
L	....NAVICULA			0
	...NITZSCHIACEAE			
	....NITZSCHIA		120	2
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..OSCILLATORIALES	FILAMENTOUS		
	...OSCILLATORIACEAE			
D	....OSCILLATORIA		4,100	78

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
L - LESS THEN 1%: MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:

PHYL/DIV 0.874
CLASS 0.874
ORDER 1.006
FAMILY 1.037
GENERA 1.037

05062500 WILD RICE RIVER AT TWIN VALLEY, MINN.

LOCATION.--Lat 47°16'00", long 96"14'40", in NE¼ sec.27, T.144 N., R.44 W., Norman County, at gaging station on left bank 100 ft (30 m) upstream from highway bridge, 0.8 mi (1.3 km) northeast of village of Twin Valley, and 2 mi (3 km) upstream from small tributary.

DRAINAGE AREA.--888 mi² (2,300 km²).

PERIOD OF RECORD.--Chemical analyses: October 1974 to September 1975.
Sediment records: Water years 1971, 1973-75 (partial-record station).

REMARKS.--Miscellaneous samples of chemical data published for water years 1967, 1974.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TEMPER-ATURE (DEG C)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
NOV.		
12...	1.0	550
DEC.		
16...	.5	438
JAN.		
28...	.5	500
MAR.		
10...	.0	593
APR.		
10...	1.0	365
11...	1.0	365
12...	1.0	362
13...	.0	365
14...	.0	368
15...	.0	360
16...	.0	368
17...	1.0	371
18...	2.0	395
19...	1.0	412
APR.		
20...	1.0	368
21...	1.0	380
22...	1.0	392
23...	3.5	392
24...	6.0	420
25...	5.5	402
26...	5.5	398
27...	5.0	400
28...	5.0	402
29...	5.5	420
29...	5.5	420
MAY		
01...	6.0	390
02...	6.0	390
03...	7.0	390
04...	8.0	385
05...	10.0	380
06...	11.0	380
07...	13.0	370
MAY		
08...	13.0	370
09...	12.5	370
10...	14.0	362
11...	14.0	375
12...	14.0	380
13...	14.0	388
14...	14.0	395
15...	14.0	398
16...	15.0	375
17...	15.0	380
18...	14.5	395
19...	15.5	405
20...	18.0	402
21...	17.5	412
MAY		
22...	15.0	415
23...	17.5	430
24...	18.0	435
JUNE		
03...	19.0	400
JULY		
03...	22.9	415
15...	23.0	470
AUG.		
26...	10.0	440
26...	--	460

05062500 WILD RICE RIVER AT TWIN VALLEY, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPERATURE (DEG C) (00020)	TEMPERATURE (DEG C) (00010)	INSTANTANEOUS DISCHARGE (CFS) (00061)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L) (70300)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L) (70301)	DISSOLVED SOLIDS (TONS PER DAY) (70302)	TURBIDITY (JTU) (00070)	COLOR (PLATINUM-COBALT UNITS) (00080)	DISSOLVED OXYGEN (MG/L) (00300)	CARBON DIOXIDE (CO2) (MG/L) (00405)
NOV. 12...	1200	-2.5	1.0	112	550	310	290	93.7	8	30	13.6	1.2
DEC. 16...	1500	-5.5	.5	64	560	355	348	61.7	3	20	11.0	7.9
JAN. 28...	1100	--	--	--	--	--	352	--	--	--	--	--
MAR. 10...	1000	-19.0	.0	61	589	353	354	58.9	3	20	8.3	30
APR. 29...	1500	8.0	5.5	1730	420	266	243	1240	37	45	8.7	1.6
JUNE 03...	1130	21.5	19.0	272	437	279	255	205	16	20	9.3	5.8
JULY 03...	0940	29.6	22.9	3180	415	283	251	2430	36	90	--	5.3
15...	1100	--	23.0	909	470	286	255	702	25	60	--	2.5
AUG. 26...	1415	19.0	18.0	101	460	297	268	81.0	3	45	9.6	1.8

DEC. 16, 1974
1500 HOURS

IDENTIFICATION OF PHYTOPLANKTON

780 CELLS/ML

_ORGANISM__NAME_______________	_COMMON__NAME______	CELLS/ML	PER_CENT
CHLOROPHYTA	GREEN ALGAE		
.CHLOROPHYCEAE			
..CHLOROCOCCALES			
...OOCYSTACEAE			
....ANKISTRODESMUS		110	14
...SCENEDESMACEAE			
....SCENEDESMUS		55	7
..VOLVOCALES			
...CHLAMYDOMONADACEAE			
....CHLAMYDOMONAS		110	14
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..CENTRALES	CENTRIC		
...COSCINODISCACEAE			
D ....COSCINODISCUS		260	33
..PENNALES	PENNATE		
...ACHNANTHACEAE			
....COCCONEIS		14	2
...DIATOMACEAE			
....DIATOMA		82	11
...FRAGILARIACEAE			
....SYNEDRA		68	9
...NAVICULACEAE	NAVICULOID		
....NAVICULA		27	4
...NITZSCHIACEAE			
....NITZSCHIA		41	5
.CHRYSOPHYCEAE	YELLOW-BROWN ALGAE		
..CHRYSOMONADALES			
...OCHROMONADACEAE			
....DINOBRYON		14	2

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.935
CLASS 1.051
ORDER 2.022
FAMILY 2.840
GENERA 2.840

05062500 WILD RICE RIVER AT TWIN VALLEY, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	PH (UNITS) (00400)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	ALKA-LINITY AS CACO3 (MG/L) (00410)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	DIS-SOLVED AMMONIA NITRO-GEN (N) (MG/L) (00608)	AMMONIA NITRO-GEN (N) (MG/L) (00610)	DIS-SOLVED ORGANIC NITRO-GEN (N) (MG/L) (00607)
NOV.												
12...	8.6	60	27	8.4	2.6	249	3.4	29	.2	.04	.15	.88
DEC.												
16...	7.9	73	32	11	3.4	320	2.4	21	--	.07	.06	.50
JAN.												
28...	--	--	--	--	--	317	--	--	.7	.14	--	.72
MAR.												
10...	7.3	74	34	10	3.9	311	3.4	21	--	.31	.55	.40
APR.												
29...	8.1	49	21	4.9	4.3	162	3.2	49	.1	.00	.00	1.0
JUNE												
03...	7.9	55	24	6.5	3.0	218	2.8	23	--	.01	.02	4.3
JULY												
03...	7.8	52	21	5.1	5.0	171	4.0	42	.2	.03	.04	1.2
15...	8.2	52	24	5.3	2.9	207	2.7	25	.2	.00	.00	1.2
AUG.												
26...	8.5	52	25	11	2.9	224	4.2	22	.1	.00	.00	.38

JAN. 28, 1975
1100 HOURS

IDENTIFICATION OF PHYTOPLANKTON

820 CELLS/ML

	_ORGANISM__NAME	_COMMON__NAME	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
	....ANKISTRODESMUS		15	2
	...SCENEDESMACEAE			
	....ACTINASTRUM		58	7
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
D	....CYCLOTELLA		170	21
	..PENNALES	PENNATE		
	...ACHNANTHACEAE			
	....ACHNANTHES		15	2
	....COCCONEIS		15	2
	...DIATOMACEAE			
	....DIATOMA		44	5
	...NAVICULACEAE	NAVICULOID		
	....NAVICULA		58	7
	...NITZSCHIACEAE			
	....NITZSCHIA		87	11
	.XANTHOPHYCEAE	YELLOW-GREEN ALGAE		
	..HETEROCOCCALES			
	...CHLOROTHECIACEAE			
	....OPHIOCYTIUM		15	2
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..OSCILLATORIALES	FILAMENTOUS		
	...OSCILLATORIACEAE			
D	....PHORMIDIUM		320	39
	EUGLENOPHYTA	EUGLENOIDS		
	.EUGLENOPHYCEAE			
	..EUGLENALES			
	...EUGLENACEAE			
	....TRACHELOMONAS		15	2

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 1.444
CLASS 1.556
ORDER 2.033
FAMILY 2.604
GENERA 2.640

05062500 WILD RICE RIVER AT TWIN VALLEY, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TOTAL ORGANIC NITRO- GEN (N) (MG/L) (00605)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL NITRO- GEN (N) (MG/L) (00600)	DIS- SOLVED ORTHO, PHOS- PHORUS (P) (MG/L) (00671)	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L) (00666)	TOTAL PHOS- PHORUS (P) (MG/L) (00665)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)	DIS- SOLVED SILICA (SIO2) (MG/L) (00955)	TOTAL IRON (FE) (UG/L) (01045)	TOTAL MAN- GANESE (MN) (UG/L) (01055)	FECAL COLI- FORM (COL. PER 100 ML) (31616)
NOV.												
12...	.95	.00	.14	1.2	.00	.01	.06	17	9.9	--	--	31
DEC.												
16...	.66	.09	.11	.85	.02	.02	.02	--	12	370	60	82
JAN.												
28...	.71	--	--	1.0	--	--	--	--	--	--	--	8
MAR.												
10...	.41	.14	.14	.88	.01	.01	.02	20	20	--	--	6
APR.												
29...	1.0	.60	.64	1.6	.09	.09	.10	16	11	2000	30	71
JUNE												
03...	4.4	.01	.01	4.4	.00	.00	.03	16	9.5	660	80	12
JULY												
03...	1.3	.13	.13	1.4	.06	.08	.17	--	18	--	--	--
15...	1.5	.05	.06	1.6	.04	.07	.14	18	18	1900	160	--
AUG.												
26...	.67	.01	.02	.69	.03	.03	.05	12	13	180	40	33

MAR. 10. 1975
1440 HOURS

IDENTIFICATION OF PHYTOPLANKTON

400 CELLS/ML

	_ORGANISM__NAME_	_COMMON__NAME_	CELLS/ML	PER_CENT
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
	....CYCLOTELLA		41	10
	..PENNALES	PENNATE		
	...ACHNANTHACEAE			
	....COCCONEIS		55	14
	...CYMBELLACEAE			
	....AMPHORA		14	3
	...DIATOMACEAE			
D	....DIATOMA		140	34
	...FRAGILARIACEAE			
D	....SYNEDRA		68	17
	...NAVICULACEAE	NAVICULOID		
	....GYROSIGMA		27	7
	....NAVICULA		55	14

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES. BASED ON ACTUAL COUNTS:
ORDER 0.440
FAMILY 2.338
GENERA 2.528

05062500 WILD RICE RIVER AT TWIN VALLEY, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	STREPTOCOCCI (COLONIES PER 100 ML) (31679)	DISSOLVED SOLIDS (TONS PER AC-FT) (70303)	PERCENT SATURATION (00301)	HARDNESS (CA,MG) (MG/L) (00900)	NONCARBONATE HARDNESS (MG/L) (00902)	SODIUM ADSORPTION RATIO (00931)	PERCENT SODIUM (00932)	DISSOLVED AMMONIA (NH4) (MG/L) (71846)	TOTAL NITROGEN (NO3) (MG/L) (71887)	DISSOLVED ORTHO PHOSPHATE (PO4) (MG/L) (00660)	PHOSPHATE (PO4) (MG/L) (00650)
NOV.											
12...	91	.42	97	260	12	.2	6	.05	5.5	.00	.10
DEC.											
16...	85	.48	80	310	0	.3	7	.09	3.8	.06	.06
JAN.											
20...	5	.51	--	300	0	.3	7	.10	4.5	.03	.09
MAR.											
10...	2	.48	59	320	14	.2	6	.40	3.9	.03	.06
APR.											
29...	38	.36	71	210	46	.1	5	.00	7.3	.20	.31
JUNE											
03...	19	.38	103	240	18	.2	6	.01	20	.00	.09
JULY											
03...	--	.38	--	220	46	.2	5	.04	6.3	.10	.52
15...	62	.39	--	230	22	.2	5	.00	6.9	.12	.43
AUG.											
26...	35	.40	103	230	4	.3	9	.00	3.1	.09	.15

APR. 29, 1975
1500 HOURS

IDENTIFICATION OF PHYTOPLANKTON

750 CELLS/ML

	_ORGANISM__NAME_______________	_COMMON__NAME______	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
	....ANKISTRODESMUS		97	13
	..VOLVOCALES			
	...CHLAMYDOMONADACEAE			
D	....CHLAMYDOMONAS		170	23
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
	....CYCLOTELLA		24	3
	..PENNALES	PENNATE		
	...ACHNANTHACEAE			
	....COCCONEIS		24	3
	...DIATOMACEAE			
	....DIATOMA		24	3
	...GOMPHONEMATACEAE			
	....GOMPHONEMA		73	10
	...MERIDIONACEAE			
	....MERIDION		24	3
	...NAVICULACEAE	NAVICULOID		
D	....NAVICULA		120	16
	...NITZSCHIACEAE			
D	....NITZSCHIA		170	23
	EUGLENOPHYTA	EUGLENOIDS		
	.EUGLENOPHYCEAE			
	..EUGLENALES			
	...EUGLENACEAE			
	....EUGLENA		24	3

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 1.123
CLASS 1.123
ORDER 1.641
FAMILY 2.900
GENERA 2.900

05062500 WILD RICE RIVER AT TWIN VALLEY, MINN.--Continued

JUNE 3, 1975
1130 HOURS

IDENTIFICATION OF PHYTOPLANKTON

570 CELLS/ML

_ORGANISM__NAME_______________	_COMMON__NAME_______	CELLS/ML	PER_CENT
CHLOROPHYTA	GREEN ALGAE		
.CHLOROPHYCEAE			
..CHLOROCOCCALES			
...SCENEDESMACEAE			
....SCENEDESMUS		25	4
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..CENTRALES	CENTRIC		
...COSCINODISCACEAE			
....CYCLOTELLA		25	4
..PENNALES	PENNATE		
...CYMBELLACEAE			
....RHOPALODIA		25	4
...DIATOMACEAE			
....DIATOMA		25	4
...FRAGILARIACEAE			
....FRAGILARIA		25	4
....SYNEDRA		75	13
...GOMPHONEMATACEAE			
....GOMPHONEMA		75	13
...NAVICULACEAE	NAVICULOID		
D ....NAVICULA		170	30
...NITZSCHIACEAE			
D ....NITZSCHIA		120	22

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.258
CLASS 0.258
ORDER 0.513
FAMILY 2.610
GENERA 2.751

JULY 15, 1975
1100 HOURS

IDENTIFICATION OF PHYTOPLANKTON

670 CELLS/ML

_ORGANISM__NAME_______________	_COMMON__NAME_______	CELLS/ML	PER_CENT
CHLOROPHYTA	GREEN ALGAE		
.CHLOROPHYCEAE			
..CHLOROCOCCALES			
...OOCYSTACEAE			
L ....ANKISTRODESMUS			0
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..CENTRALES	CENTRIC		
...COSCINODISCACEAE			
....CYCLOTELLA		28	4
D ....MELOSIRA		220	33
..PENNALES	PENNATE		
...ACHNANTHACEAE			
....ACHNANTHES		28	4
....COCCONEIS		28	4
...CYMBELLACEAE			
....CYMBELLA		28	4
...DIATOMACEAE			
....DIATOMA		28	4
...FRAGILARIACEAE			
L ....SYNEDRA			0
...GOMPHONEMATACEAE			
D ....GOMPHONEMA		110	17
...NAVICULACEAE	NAVICULOID		
D ....NAVICULA		170	25
...NITZSCHIACEAE			
....NITZSCHIA		28	4

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
L - LESS THEN 1%: MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
ORDER 0.954
FAMILY 2.333
GENERA 2.605

05062500 WILD RICE RIVER AT TWIN VALLEY, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	TOTAL ALDRIN (UG/L) (39330)	TOTAL CHLORDANE (UG/L) (39350)	TOTAL DDD (UG/L) (39360)	TOTAL DDE (UG/L) (39365)	TOTAL DDT (UG/L) (39370)	TOTAL DIELDRIN (UG/L) (39380)	TOTAL ENDRIN (UG/L) (39390)	TOTAL HEPTACHLOR (UG/L) (39410)	TOTAL HEPTACHLOR EPOXIDE (UG/L) (39420)	TOTAL LINDANE (UG/L) (39340)
JUNE 03...	1130	.00	.0	.00	.00	.00	.00	.00	.00	.00	.00
AUG. 26...	1415	.00	.0	.00	.00	.00	.00	.00	.00	.00	.00

DATE	TOTAL TOXAPHENE (UG/L) (39400)	TOTAL 2,4-D (UG/L) (39730)	TOTAL 2,4,5-T (UG/L) (39740)	TOTAL SILVEX (UG/L) (39760)	TOTAL DIAZINON (UG/L) (39570)	TOTAL ETHION (UG/L) (39398)	TOTAL MALATHION (UG/L) (39530)	TOTAL METHYL PARATHION (UG/L) (39600)	TOTAL METHYL TRITHION (UG/L) (39790)	TOTAL PARATHION (UG/L) (39540)	TOTAL TRITHION (UG/L) (39786)
JUNE 03...	0	.00	.00	.00	.00	--	.00	.00	--	.00	--
AUG. 26...	0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

DATE	TOTAL PCB (UG/L) (39516)	TOTAL METHOXYCHLOR (UG/L) (39480)	ALDRIN IN BOTTOM MATERIAL (UG/KG) (39333)	LINDANE IN BOTTOM MATERIAL (UG/KG) (39343)	CHLORDANE IN BOTTOM MATERIAL (UG/KG) (39351)	DDD IN BOTTOM MATERIAL (UG/KG) (39363)	DDE IN BOTTOM MATERIAL (UG/KG) (39368)	DDT IN BOTTOM MATERIAL (UG/KG) (39373)	DIELDRIN IN BOTTOM MATERIAL (UG/KG) (39383)	ENDRIN IN BOTTOM MATERIAL (UG/KG) (39393)	TOXAPHENE IN BOTTOM MATERIAL (UG/KG) (39403)
JUNE 03...	.0	--	.0	.0	0	.0	.0	.0	.0	.0	0
AUG. 26...	.0	.00	.0	.0	0	.0	.0	.0	.0	.0	0

DATE	HEPTACHLOR IN BOTTOM MATERIAL (UG/KG) (39413)	HEPTACHLOR EPOXIDE IN BOTTOM MATERIAL (UG/KG) (39423)	PCB IN BOTTOM MATERIAL (UG/KG) (39519)	MALATHION IN BOTTOM MATERIAL (UG/KG) (39531)	PARATHION IN BOTTOM MATERIAL (UG/KG) (39541)	DIAZINON IN BOTTOM MATERIAL (UG/KG) (39571)	METHYL PARATHION IN BOTTOM MATERIAL (UG/KG) (39601)	2,4-D IN BOTTOM MATERIAL (UG/KG) (39731)	2,4,5-T IN BOTTOM MATERIAL (UG/KG) (39741)	SILVEX IN BOTTOM MATERIAL (UG/KG) (39761)
JUNE 03...	.0	.0	0	--	.0	--	--	--	0	0
AUG. 26...	.0	.0	0	.0	.0	.0	.0	0	0	0

DATE	TIME	TOTAL ALUMINUM IN BOTTOM MATERIAL (UG/G) (01108)	TOTAL ARSENIC IN BOTTOM MATERIAL (UG/G) (01003)	TOTAL BARIUM IN BOTTOM MATERIAL (UG/G) (01008)	TOTAL BERYLLIUM IN BOTTOM MATERIAL (UG/G) (01013)	TOTAL BORON IN BOTTOM MATERIAL (UG/G) (01023)	TOTAL CADMIUM IN BOTTOM MATERIAL (UG/G) (01028)	ORGANIC CARBON IN BOTTOM MATERIAL (C) (G/KG) (00687)	TOTAL CHROMIUM IN BOTTOM MATERIAL (UG/G) (01029)	TOTAL COBALT IN BOTTOM MATERIAL (UG/G) (01038)	TOTAL COPPER IN BOTTOM MATERIAL (UG/G) (01043)	TOTAL CYANIDE IN BOTTOM MATERIAL (UG/G) (00721)
JUNE 03...	1130	420	1	20	0	210	0	.0	5	0	2	0
AUG. 26...	1415	3000	8	<200	<10	16	10	.5	10	50	<10	0

DATE	TOTAL LEAD IN BOTTOM MATERIAL (UG/G) (01052)	TOTAL MERCURY IN BOTTOM MATERIAL (UG/G) (71921)	TOTAL MOLYBDENUM IN BOTTOM MATERIAL (UG/G) (01063)	TOTAL NICKEL IN BOTTOM MATERIAL (UG/G) (01068)	TOTAL KJEL. NITROGEN IN BOTTOM MAT. (MG/KG) (00626)	TOTAL NITROGEN IN BOTTOM MATERIAL (N) (MG/KG) (00603)	OIL AND GREASE IN BOTTOM MATERIAL (MG/KG) (00553)	TOTAL PHOSPHORUS IN BOTTOM MATERIAL (MG/KG) (00668)	TOTAL SELENIUM IN BOTTOM MATERIAL (UG/G) (01148)	TOTAL SILVER IN BOTTOM MATERIAL (UG/G) (01078)	TOTAL STRONTIUM IN BOTTOM MATERIAL (UG/G) (01083)	TOTAL ZINC IN BOTTOM MATERIAL (UG/G) (01093)
JUNE 03...	10	.0	0	0	330	410	1000	61	0	2	25	6
AUG. 26...	0	.0	1	50	84	86	2000	50	0	<10	110	170

05062500 WILD RICE RIVER AT TWIN VALLEY, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	TOTAL ALUMINUM (AL) (UG/L) (01105)	TOTAL ARSENIC (AS) (UG/L) (01002)	TOTAL BARIUM (BA) (UG/L) (01007)	TOTAL BERYLLIUM (BE) (UG/L) (01012)	TOTAL BORON (B) (UG/L) (01022)	TOTAL CADMIUM (CD) (UG/L) (01027)	TOTAL CHROMIUM (CR) (UG/L) (01034)	TOTAL COBALT (CO) (UG/L) (01037)	TOTAL COPPER (CU) (UG/L) (01042)	CYANIDE (CN) (MG/L) (00720)
DEC. 16...	1500	100	3	<100	<10	40	<10	<10	<50	40	.00
JUNE 03...	1130	410	3	0	0	550	<10	0	<50	<10	.00
AUG. 26...	1415	80	3	<100	<10	40	<10	0	<50	<10	.00
TIME WTD. AVG.	--	197	3	--	--	240	--	--	--	--	.00

DATE	TOTAL LEAD (PB) (UG/L) (01051)	TOTAL LITHIUM (LI) (UG/L) (01132)	TOTAL MERCURY (HG) (UG/L) (71900)	TOTAL MOLYBDENUM (MO) (UG/L) (01062)	TOTAL NICKEL (NI) (UG/L) (01067)	OIL AND GREASE (MG/L) (00550)	TOTAL SELENIUM (SE) (UG/L) (01147)	TOTAL SILVER (AG) (UG/L) (01077)	TOTAL STRONTIUM (SR) (UG/L) (01082)	DISSOLVED VANADIUM (V) (UG/L) (01085)	TOTAL ZINC (ZN) (UG/L) (01092)
DEC. 16...	<100	20	<.1	1	<50	1	0	<10	1900	.0	8
JUNE 03...	<100	10	.0	2	<50	2	0	<10	150	.0	6
AUG. 26...	<100	10	.0	0	<50	0	0	<10	100	2.3	0
TIME WTD. AVG.	--	13	--	1	--	1	0	--	720	.8	5

05062500 WILD RICE RIVER AT TWIN VALLEY, MINN.--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL			MAY			JUNE		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	91	---	---	1590	---	---	315	---	---
2	90	---	---	1530	165	682	289	---	---
3	90	---	---	1460	163	643	280	---	---
4	90	---	---	1370	160	592	268	70	51
5	90	---	---	1290	156	543	272	50	37
6	92	---	---	1220	157	517	264	44	31
7	98	---	---	1150	155	481	264	43	31
8	107	---	---	1070	160	462	236	40	26
9	120	---	---	1020	146	402	231	40	25
10	160	530	229	972	137	360	227	42	26
11	250	369	249	918	155	384	226	47	29
12	500	178	240	856	161	372	226	45	27
13	800	184	397	802	145	314	231	40	25
14	1040	350	983	771	130	271	222	36	22
15	1200	350	1130	742	119	238	215	43	25
16	1300	359	1260	721	114	222	220	40	24
17	1700	652	2990	687	108	200	216	30	18
18	2690	652	4740	654	100	177	204	38	21
19	2870	482	3740	630	95	162	211	238	136
20	2490	340	2290	609	97	159	505	307	419
21	2310	354	2210	594	98	157	996	315	847
22	2190	305	1800	599	87	141	1360	250	918
23	2060	320	1780	596	92	148	1540	187	778
24	2020	346	1890	570	75	115	1350	170	620
25	1930	275	1430	555	---	---	1030	208	578
26	1860	230	1160	524	---	---	975	92	242
27	1810	221	1080	491	---	---	924	154	384
28	1770	224	1070	452	---	---	875	310	732
29	1710	189	873	412	---	---	2690	473	3440
30	1660	---	---	381	---	---	3000	265	2150
31	---	---	---	348	---	---	---	---	---

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	3420	200	1850	276	68	51	102		
2	3240	148	1290	304	39	32	77		
3	3080	143	1190	315	30	26	70		
4	2580	138	961	280	31	23	66		
5	2180	110	647	248	35	23	64		
6	1920	125	648	224	36	22	60		
7	1830	144	712	204	25	14	62		
8	1930	129	672	191	15	7.7	58		
9	1670	120	541	180	16	7.8	54		
10	1470	105	417	172	21	9.8	51		
11	1280	92	318	164	26	12	47		
12	1150	102	317	154	28	12	43		
13	1050	135	383	146	---	---	42		
14	975	162	426	140	---	---	39		
15	900	155	377	135	---	---	37		
16	830	123	276	129	---	---	35		
17	763	106	218	124	---	---	33		
18	698	108	204	118	---	---	35		
19	643	104	181	114	---	---	37		
20	596	98	158	108	---	---	38		
21	550	90	134	105	---	---	42		
22	512	80	111	105	---	---	49		
23	476	70	90	117	---	---	52		
24	440	62	74	118	---	---	49		
25	407	58	64	112	---	---	44		
26	377	56	57	102	18	5.0	41		
27	346	55	51	94	---	---	38		
28	322	53	46	88	---	---	38		
29	289	57	44	80	---	---	39		
30	260	68	48	74	---	---	35		
31	246	88	58	74	---	---	---		

05079000 RED LAKE RIVER AT CROOKSTON, MINN.

LOCATION.--Lat 47°46'32", long 96°36'33", in SW¼SW¼ sec.30, T.150 N., R.46 W., Polk County, at gaging station on right bank at downstream side of highway bridge in Crookston, 0.3 mi (0.5 km) downstream from Interstate Power Co.'s dam, 0.6 mi (1.0 km) downstream from bridge on U.S. Highway 75, and 53 mi (85 km) upstream from mouth.

DRAINAGE AREA.--5,280 mi² (13,680 km²), approximately.

PERIOD OF RECORD.--Chemical analyses: October 1973 to current year.

REMARKS.--Miscellaneous chemical analyses are published for water years 1962, 1964-1966, 1968, 1969.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPERATURE (DEG C) (00020)	TEMPERATURE (DEG C) (00010)	INSTANTANEOUS DISCHARGE (CFS) (00061)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L) (70300)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L) (70301)	VOLATILE FILTERABLE RESIDUE (MG/L) (00520)	DISSOLVED SOLIDS (TONS PER DAY) (70302)	COLOR (PLATINUM-COBALT UNITS) (00080)	CARBON DIOXIDE (CO2) (MG/L) (00405)
OCT.											
03...	1300	16.5	7.0	1205	320	198	177	--	651	30	1.5
NOV.											
15...	0830	--	.0	1030	365	248	220	104	690	20	1.7
DEC.											
11...	1600	--	.0	839	385	256	226	103	580	10	3.1
FEB.											
12...	1615	-5.0	.0	890	365	221	174	94	531	10	19
MAR.											
26...	1100	-6.0	.5	1010	470	322	278	128	878	20	2.1
MAY											
07...	1405	20.5	13.0	6730	395	267	233	84	4850	45	2.1
JUNE											
17...	1445	23.5	19.0	2000	360	228	202	102	1230	25	.8
SEP.											
10...	1100	16.5	15.5	2030	310	210	183	98	1150	17	--

DATE	PH (UNITS) (00400)	DISSOLVED CALCIUM (CA) (MG/L) (00915)	DISSOLVED MAGNESIUM (MG) (MG/L) (00925)	DISSOLVED SODIUM (NA) (MG/L) (00930)	DISSOLVED POTASSIUM (K) (MG/L) (00935)	ALKALINITY AS CACO3 (MG/L) (00410)	DISSOLVED CHLORIDE (CL) (MG/L) (00940)	DISSOLVED SULFATE (SO4) (MG/L) (00945)	DISSOLVED FLUORIDE (F) (MG/L) (00950)	TOTAL KJELDAHL NITROGEN (N) (MG/L) (00625)
OCT.										
03...	8.3	41	14	4.0	1.9	156	2.4	13	.1	--
NOV.										
15...	8.3	50	17	4.8	1.7	176	2.2	32	.1	.89
DEC.										
11...	8.1	53	18	5.5	2.9	187	3.0	17	.1	.88
FEB.										
12...	7.2	25	19	11	3.1	155	2.8	9.9	.1	.80
MAR.										
26...	8.3	61	24	5.3	4.3	210	3.9	44	.3	1.2
MAY										
07...	8.1	50	18	3.7	3.9	134	3.9	65	.1	1.1
JUNE										
17...	8.7	47	18	3.7	2.3	162	3.2	25	.1	.96
SEP.										
10...	--	44	15	3.2	2.3	148	3.3	19	.1	2.5

05079000 RED LAKE RIVER AT CROOKSTON, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL NITRO-GEN (N) (MG/L) (00600)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	PERCENT SODIUM (00932)	TOTAL NITRO-GEN (NO3) (MG/L) (71887)
OCT.										
03...	.02	--	.06	6.0	.26	160	4	.1	5	--
NOV.										
15...	.05	.94	.05	6.7	.36	190	19	.1	5	4.2
DEC.										
11...	.03	.89	.04	7.9	.35	210	10	.2	5	3.9
FEB.										
12...	.08	.88	.03	9.6	.30	160	0	.4	14	3.9
MAR.										
20...	.48	1.7	.10	9.4	.44	250	41	.1	4	7.4
MAY										
07...	.18	1.3	.06	7.6	.36	200	45	.1	4	5.8
JUNE										
17...	.00	.96	.04	6.7	.31	190	29	.1	6	4.3
SEP.										
10...	.05	2.6	.08	6.9	.29	170	23	.1	6	11

05105300 ROSEAU RIVER BELOW ROSEAU, MINN.

LOCATION.--Lat 48°53'28", long 95°43'50", in SW¼SE¼ sec.31, T.163 N., R.39 W., Roseau County, at bridge on County Highway 28, 900 ft (2.74 m) downstream from Hay Creek and 3.2 mi (5.1 km) northeast of Roseau.

PERIOD OF RECORD.--Chemical analyses: October 1972 to current year.

MAR. 17, 1975
1430 HOURS

IDENTIFICATION OF PHYTOPLANKTON

67 CELLS/ML

	_ORGANISM__NAME_	_COMMON__NAME_	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
	....ANKISTRODESMUS		7	11
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..PENNALES	PENNATE		
	...ACHNANTHACEAE			
D	....COCCONEIS		22	33
	...FRAGILARIACEAE			
	....SYNEDRA		7	11
	...NAVICULACEAE	NAVICULOID		
	....PINNULARIA		7	11
	...NITZSCHIACEAE			
D	....HANTZSCHIA		15	22
	....NITZSCHIA		7	11

NOTE: D = DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.503
CLASS 0.503
ORDER 0.503
FAMILY 2.113
GENERA 2.419

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPERATURE (DEG C) (00020)	TEMPERATURE (DEG C) (00010)	INSTANTANEOUS DISCHARGE (CFS) (00061)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L) (70300)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L) (70301)	VOLATILE FILTRABLE RESIDUE (MG/L) (00520)	DISSOLVED SOLIDS (TONS PER DAY) (70302)	TURBIDITY (JTU) (00070)
OCT., 02...	0930	1.5	8.0	31	380	230	206	--	19.6	--
NOV., 14...	1000	-8.0	.5	66	350	265	225	107	47.3	5
DEC., 18...	1030	-8.0	.5	16	525	336	306	112	14.5	--
FEB., 05...	1200	-5.0	.5	13	540	327	318	130	11.7	--
MAR., 17...	1430	--	.0	10	545	352	333	--	9.79	--
MAY 01...	1100	3.5	4.5	3000	275	182	156	78	1470	--
JUNE 09...	1010	16.0	15.0	166	345	248	213	114	111	--
JULY 21...	1530	23.5	23.0	123	380	259	224	112	86.0	--
SEP., 08...	1545	19.5	17.0	8.8	540	285	261	132	6.77	--

05105300 ROSEAU RIVER BELOW ROSEAU, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	COLOR (PLATINUM-COBALT UNITS) (00080)	DIS-SOLVED OXYGEN (MG/L) (00300)	CARBON DIOXIDE (CO2) (MG/L) (00405)	PH (UNITS) (00400)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	ALKA-LINITY AS CACO3 (MG/L) (00410)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)
OCT, 02...	40	9,7	1,2	8,5	47	17	5,5	1,0	188	2,3
NOV, 14...	30	13,4	2,9	8,1	50	16	11	1,3	190	10
DEC, 18...	30	9,1	8,6	7,8	70	25	8,4	1,7	279	3,0
FEB, 05...	30	7,2	7,3	7,8	65	27	19	2,5	267	3,8
MAR, 17...	20	8,4	8,8	7,8	71	29	13	2,2	285	6,0
MAY 01...	50	10,4	1,5	8,2	37	12	2,0	2,4	122	2,3
JUNE 09...	55	9,4	1,5	8,4	55	18	5,4	1,3	191	2,5
JULY 21...	65	7,6	2,0	8,3	53	19	4,0	,9	200	2,4
SEP, 08...	25	10,6	1,1	8,6	53	25	11	2,0	234	4,8

DATE	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L) (00625)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL NITRO-GEN (N) (MG/L) (00600)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	BIO-CHEM-ICAL OXYGEN DEMAND 5 DAY (MG/L) (00310)	IMME-DIATE COLI-FORM (COL. PER 100 ML) (31501)
OCT, 02...	7,0	,2	--	,01	--	,10	12	2,0	740
NOV, 14...	12	,1	,52	,00	,52	,06	10	1,4	800
DEC, 18...	16	,2	,80	,05	,85	,04	14	1,2	--
FEB, 05...	22	,1	,70	,22	,92	,05	18	1,4	580
MAR, 17...	21	,3	,65	,38	1,0	,06	19	1,6	200
MAY 01...	19	,1	,90	,36	1,3	,07	7,2	--	190
JUNE 09...	8,0	,1	--	,05	--	,04	7,6	3,0	480
JULY 21...	6,2	,1	1,1	,05	1,2	,07	18	1,7	380
SEP, 08...	18	,1	1,0	,02	1,0	,08	6,6	1,9	520

DATE	FECAL COLI-FORM (COL. PER 100 ML) (31616)	STREP-TOCOCCI (COL-ONIES PER 100 ML) (31679)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	PER-CENT SATUR-ATION (00301)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	PERCENT SODIUM (00932)	TOTAL NITRO-GEN (NO3) (MG/L) (71887)
OCT, 02...	120	82	,31	77	190	0	,2	6	--
NOV, 14...	24	23	,36	96	190	0	,3	11	2,3
DEC, 18...	250	28	,46	65	280	0	,2	6	3,8
FEB, 05...	390	140	,44	51	270	7	,5	13	4,1
MAR, 17...	59	42	,48	60	300	11	,3	9	4,6
MAY 01...	22	37	,25	83	140	20	,1	5	5,6
JUNE 09...	180	73	,34	96	210	20	,2	5	--
JULY 21...	90	150	,35	90	210	10	,1	4	5,1
SEP, 08...	106	60	,39	114	240	2	,3	9	4,5

05112000 ROSEAU RIVER BELOW STATE DITCH 51, NEAR CARIBOU, MINN.

LOCATION.--Lat 48°58'54", long 96°27'46", in SE¼SW¼ sec.34, T.164 N., R.45 W., Kittson County, at gaging station, on left bank 400 ft (122 m) downstream from State ditch 51 (known locally as Caribou cutoff ditch) and 0.6 mi (1.0 km) west of Caribou.

DRAINAGE AREA.--1,570 mi² (4,070 km²), approximately.

PERIOD OF RECORD.--Chemical analysis: October 1972 to current year.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	---	---	390	370	500	495	630	630				
2	---	---	395	390	505	500	630	630				
3	---	---	395	390	515	510	635	630				
4	---	---	390	390	520	515	630	630				
5	---	---	390	390	520	520	630	625				
6	---	---	395	390	520	520	625	625				
7	---	---	390	390	525	525	625	625				
8	380	380	390	390	550	525	625	620				
9	380	375	390	385	560	550	620	615				
10	375	370	395	385	565	560	625	615				
11	375	370	395	395	570	565	615	615				
12	380	370	395	395	580	570	615	615				
13	380	360	395	395	600	580	630	615				
14	360	350	400	400	615	615	650	630				
15	350	350	420	400	615	615	660	650				
16	350	340	420	415	630	615	660	660				
17	345	345	420	420	630	630	665	655				
18	345	340	420	420	640	630	665	655				
19	340	340	430	420	640	640	665	665				
20	345	340	445	435	645	645	665	665				
21	345	340	440	440	645	645	665	665				
22	350	345	440	435	650	640	665	665				
23	360	350	435	430	655	650	---	---				
24	360	360	435	425	655	655	---	---				
25	360	360	440	430	655	655	---	---				
26	360	360	450	440	655	645	---	---				
27	360	360	455	450	650	650	---	---				
28	360	360	460	455	650	645	---	---				
29	365	360	475	460	645	645	---	---				
30	370	365	495	460	640	640	---	---				
31	370	370	---	---	640	630	---	---				

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

PERIPHYTON

Date	Length of exposure (days)	Biomass (g/m²)		Chlorophyll a (mg/m²)	Chlorophyll b (mg/m²)	Biomass pigment ratio	Sampling method
		Dry weight	Ash weight				
Nov 13	43	8.5	6.2	2.0	0.5	1150	Polyethylene strip
Mar 18	42	0.2	0.0	0.3	0.0	670	Polyethylene strip
Jul 22	42	29	20	3.0	0.8	3000	Polyethylene strip

05112000 ROSEAU RIVER BELOW STATE DITCH 51, NEAR CARIBOU, MINN.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	---	---	255	255			---	---	420	410	---	---
2	---	---	260	255			---	---	420	420	---	---
3	---	---	260	260			---	---	420	410	---	---
4	---	---	260	260			---	---	410	380	---	---
5	---	---	265	260			---	---	390	390	---	---
6	---	---	270	265			---	---	390	390	---	---
7	---	---	270	265			---	---	400	390	---	---
8	---	---	275	270			---	---	---	---	---	---
9	---	---	275	270			---	---	---	---	440	440
10	---	---	275	275			---	---	---	---	440	440
11	---	---	---	---			---	---	---	---	440	440
12	---	---	---	---			---	---	---	---	440	440
13	---	---	---	---			---	---	---	---	440	440
14	---	---	---	---			---	---	---	---	450	440
15	---	---	---	---			---	---	---	---	455	445
16	---	---	---	---			---	---	---	---	455	455
17	---	---	---	---			---	---	---	---	455	455
18	---	---	---	---			---	---	360	360	455	450
19	---	---	---	---			---	---	365	360	450	450
20	---	---	---	---			---	---	385	365	450	450
21	---	---	---	---			---	---	385	385	450	450
22	---	---	---	---			---	---	395	385	450	450
23	---	---	---	---			---	---	395	395	450	445
24	255	255	---	---			---	---	395	395	445	445
25	255	255	---	---			---	---	395	395	445	445
26	255	255	---	---			---	---	---	---	445	445
27	255	255	---	---			---	---	---	---	445	445
28	255	255	---	---			---	---	---	---	445	445
29	255	255	---	---			385	375	---	---	450	445
30	255	255	---	---			405	395	---	---	450	450
31	---	---	---	---			410	405	---	---	---	---

05112000 ROSEAU RIVER BELOW STATE DITCH 51, NEAR CARIBOU, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPERATURE (DEG C) (00020)	TEMPERATURE (DEG C) (00010)	INSTANTANEOUS DISCHARGE (CFS) (00061)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L) (70300)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L) (70301)	VOLATILE FILTRABLE RESIDUE (MG/L) (00520)	DISSOLVED SOLIDS (TONS PER DAY) (70302)	TURBIDITY (JTU) (00070)
OCT. 01...	1300	8.0	8.0	96	380	239	209	--	62.4	7
NOV. 13...	1400	-3.0	.5	115	400	274	234	113	85.1	6
DEC. 17...	1530	<-5.0	.5	43	630	406	365	174	47.5	3
FEB. 04...	1600	<-5.0	.5	28	680	405	362	176	31.3	3
MAR. 18...	1215	--	.0	15	545	365	342	149	15.2	11
APR. 30...	1400	4.5	4.5	2100	265	176	148	75	998	8
JUNE 10...	1130	17.0	15.0	1300	355	242	194	127	849	15
JULY 22...	1145	24.0	22.5	1470	380	267	219	117	1060	4
SEP. 09...	1300	12.0	13.0	32	440	281	241	135	25.0	1

DATE	COLOR (PLATINUM-COBALT UNITS) (00080)	DISSOLVED OXYGEN (MG/L) (00300)	CARBON DIOXIDE (CO2) (MG/L) (00405)	PH (UNITS) (00400)	DISSOLVED CALCIUM (CA) (MG/L) (00915)	DISSOLVED MAGNESIUM (MG) (MG/L) (00925)	DISSOLVED SODIUM (NA) (MG/L) (00930)	DISSOLVED POTASSIUM (K) (MG/L) (00935)	ALKALINITY AS CACO3 (MG/L) (00410)	DISSOLVED CHLORIDE (CL) (MG/L) (00940)
OCT. 01...	50	10.1	1.9	8.3	46	20	5.4	1.4	190	1.9
NOV. 13...	50	12.9	1.3	8.5	50	20	8.1	1.6	207	5.5
DEC. 17...	50	7.6	20	7.5	82	34	8.7	2.1	329	2.0
FEB. 04...	40	1.1	13	7.7	78	31	10	2.5	328	3.3
MAR. 18...	30	1.0	24	7.4	70	34	10	2.3	310	2.6
APR. 30...	85	9.0	2.0	8.0	32	12	2.8	4.5	103	4.0
JUNE 10...	80	5.8	5.2	7.8	45	18	3.8	2.3	169	1.8
JULY 22...	75	5.5	6.1	7.8	53	19	2.8	1.4	198	1.8
SEP. 09...	45	10.1	8.7	7.7	55	23	8.2	1.3	217	2.8

DATE	DISSOLVED SULFATE (SO4) (MG/L) (00945)	DISSOLVED FLUORIDE (F) (MG/L) (00950)	TOTAL KJELDAHL NITROGEN (N) (MG/L) (00625)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL NITROGEN (N) (MG/L) (00600)	TOTAL PHOSPHORUS (P) (MG/L) (00665)	DISSOLVED SILICA (SIO2) (MG/L) (00955)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L) (00310)	IMMEDIATE COLIFORM (COL. PER 100 ML) (31501)
OCT. 01...	11	.2	1.1	.01	1.1	.09	8.8	1.4	51
NOV. 13...	15	.1	.69	.00	.69	.08	9.3	1.9	37
DEC. 17...	26	.2	1.0	.02	1.0	.06	12	1.3	810
FEB. 04...	20	.1	1.2	.08	1.3	.05	19	1.8	42
MAR. 18...	17	.3	.72	.26	.98	.04	19	1.2	2
APR. 30...	24	.1	.92	.58	1.5	.09	6.6	--	55
JUNE 10...	14	.1	.12	.00	.12	.04	7.3	3.0	260
JULY 22...	5.8	.1	1.4	.05	1.5	.09	16	1.8	200
SEP. 09...	16	.1	1.3	.08	1.4	.06	5.1	2.2	250

05112000 ROSEAU RIVER BELOW STATE DITCH 51, NEAR CARIBOU, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	FECAL COLI-FORM (COL. PER 100 ML) (31616)	STREP-TOCOCCI (COL-ONIES PER 100 ML) (31679)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	PER-CENT SATUR-ATION (00301)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	PERCENT SODIUM (00932)	TOTAL NITRO-GEN (NO3) (MG/L) (71887)
OCT. 01...	8	31	.33	88	200	8	.2	6	4.9
NOV. 13...	65	88	.37	93	210	1	.2	8	3.1
DEC. 17...	0	81	.55	58	360	16	.2	5	4.5
FEB. 04...	5	3	.55	7	320	0	.2	6	5.7
MAR. 18...	0	7	.50	7	310	5	.2	6	4.3
APR. 30...	4	29	.20	73	130	26	.1	4	4.6
JUNE 10...	16	20	.33	59	190	18	.1	4	.53
JULY 22...	58	80	.30	42	210	13	.1	3	6.4
SEP. 09...	28	40	.30	99	230	15	.2	5	6.1

DATE	TIME	TEMPER-ATURE (DEG C)	INSTAN-TANEOUS DIS-CHARGE (CFS)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .062 MM
OCT. 01...	1230	6.0	96	9	2.3	--
NOV. 13...	1330	.5	116	20	6.3	--
DEC. 17...	1615	.5	42	62	6.8	--
MAR. 16...	1215	.0	15	23	.96	--
APR. 30...	1400	4.5	2100	21	119	--
JUNE 10...	1215	15.0	1300	23	81	--
JULY 22...	1120	22.5	1470	19	75	--
SEP. 09...	1300	13.0	32	24	2.1	90

05112000 ROSEAU RIVER BELOW STATE DITCH 51, NEAR CARIBOU, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	DIS-SOLVED ARSENIC (AS) (UG/L) (01000)	SUS-PENDED ARSENIC (AS) (UG/L) (01001)	TOTAL ARSENIC (AS) (UG/L) (01002)	DIS-SOLVED CAD-MIUM (CD) (UG/L) (01025)	SUS-PENDED CAD-MIUM (CD) (UG/L) (01026)	TOTAL CAD-MIUM (CD) (UG/L) (01027)	DIS-SOLVED CHRO-MIUM (CR) (UG/L) (01030)	SUS-PENDED CHRO-MIUM (CR) (UG/L) (01031)	TOTAL CHRO-MIUM (CR) (UG/L) (01034)	DIS-SOLVED COBALT (CO) (UG/L) (01035)	SUS-PENDED COBALT (CO) (UG/L) (01036)
OCT., 01...	1300	2	0	2	1	19	20	0	0	0	0	<50
NOV., 13...	1400	--	--	--	--	--	--	--	--	--	--	--
DEC., 17...	1530	--	--	--	--	--	--	--	--	--	--	--
FEB., 04...	1600	2	0	2	2	8	10	0	0	0	0	<50
MAR., 18...	1215	--	--	--	--	--	--	--	--	--	--	--
APR., 30...	1400	--	--	--	--	--	--	--	--	--	--	--
JUNE 10...	1130	1	3	4	1	<9	<10	0	0	0	0	<50
JULY 22...	1145	--	--	--	--	--	--	--	--	--	--	--
SEP., 09...	1300	1	1	2	0	<10	<10	0	10	10	0	<50

DATE	TOTAL COBALT (CO) (UG/L) (01037)	DIS-SOLVED COPPER (CU) (UG/L) (01040)	SUS-PENDED COPPER (CU) (UG/L) (01041)	TOTAL COPPER (CU) (UG/L) (01042)	DIS-SOLVED IRON (FE) (UG/L) (01046)	TOTAL IRON (FE) (UG/L) (01045)	DIS-SOLVED LEAD (PB) (UG/L) (01049)	SUS-PENDED LEAD (PB) (UG/L) (01050)	TOTAL LEAD (PB) (UG/L) (01051)	DIS-SOLVED MAN-GANESE (MN) (UG/L) (01056)	SUS-PENDED MAN-GANESE (MN) (UG/L) (01054)
OCT., 01...	<50	13	0	13	60	350	3	<97	<100	0	30
NOV., 13...	--	--	--	--	--	330	--	--	--	--	--
DEC., 17...	--	--	--	--	--	420	--	--	--	--	--
FEB., 04...	<50	3	--	--	290	620	4	96	100	420	0
MAR., 18...	--	--	--	--	--	450	--	--	--	--	--
APR., 30...	--	--	--	--	--	410	--	--	--	--	--
JUNE 10...	<50	7	3	10	150	610	2	<98	<100	30	80
JULY 22...	--	--	--	--	--	320	--	--	--	--	--
SEP., 09...	<50	3	7	10	40	150	0	<100	<100	20	10

DATE	TOTAL MAN-GANESE (MN) (UG/L) (01055)	DIS-SOLVED MERCURY (HG) (UG/L) (71890)	SUS-PENDED MERCURY (HG) (UG/L) (71895)	TOTAL MERCURY (HG) (UG/L) (71900)	DIS-SOLVED SELE-NIUM (SE) (UG/L) (01145)	SUS-PENDED SELE-NIUM (SE) (UG/L) (01146)	TOTAL SELE-NIUM (SE) (UG/L) (01147)	DIS-SOLVED ZINC (ZN) (UG/L) (01090)	SUS-PENDED ZINC (ZN) (UG/L) (01091)	TOTAL ZINC (ZN) (UG/L) (01092)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)
OCT., 01...	30	.0	.0	.0	0	0	0	10	0	10	24
NOV., 13...	0	--	--	--	--	--	--	--	--	--	--
DEC., 17...	80	--	--	--	--	--	--	--	--	--	--
FEB., 04...	420	.0	.0	.0	1	0	1	20	20	40	19
MAR., 18...	250	--	--	--	--	--	--	--	--	--	--
APR., 30...	10	--	--	--	--	--	--	--	--	--	--
JUNE 10...	110	.1	.0	.1	0	0	0	0	20	20	20
JULY 22...	60	--	--	--	--	--	--	--	--	--	--
SEP., 09...	30	.1	.1	.2	0	0	0	10	0	10	18

05112000 ROSEAU RIVER BELOW STATE DITCH 51, NEAR CARIBOU, MINN.--Continued

OCT. 1, 1974
1300 HOURS

IDENTIFICATION OF PHYTOPLANKTON

380 CELLS/ML

_ORGANISM__NAME_	_COMMON__NAME_	CELLS/ML	PER_CENT
CHLOROPHYTA	GREEN ALGAE		
.CHLOROPHYCEAE			
..CHLOROCOCCALES			
...OOCYSTACEAE			
....ANKISTRODESMUS		27	7
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..CENTRALES	CENTRIC		
...COSCINODISCACEAE			
....CYCLOTELLA		27	7
....MELOSIRA		54	14
..PENNALES	PENNATE		
...ACHNANTHACEAE			
....COCCONEIS		27	7
...GOMPHONEMATACEAE			
....GOMPHONEMA		54	14
...NAVICULACEAE	NAVICULOID		
D ....NAVICULA		81	21
...NITZSCHIACEAE			
D ....NITZSCHIA		110	29

NOTE: D - DOMINANT ORGANISM, GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.371
CLASS 0.371
ORDER 1.095
FAMILY 2.414
GENERA 2.611

NOV. 13, 1974
1400 HOURS

IDENTIFICATION OF PHYTOPLANKTON

380 CELLS/ML

_ORGANISM__NAME_	_COMMON__NAME_	CELLS/ML	PER_CENT
CHLOROPHYTA	GREEN ALGAE		
.CHLOROPHYCEAE			
..CHLOROCOCCALES			
...CHARACIACEAE			
....SCHROEDERIA		15	4
...OOCYSTACEAE			
....ANKISTRODESMUS		15	4
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..PENNALES	PENNATE		
...CYMBELLACEAE			
....CYMBELLA		29	8
...FRAGILARIACEAE			
D ....FRAGILARIA		59	15
....SYNEDRA		29	8
...GOMPHONEMATACEAE			
....GOMPHONEMA		44	12
...NAVICULACEAE	NAVICULOID		
....NAVICULA		44	12
...NITZSCHIACEAE			
D ....NITZSCHIA		130	35
EUGLENOPHYTA	EUGLENOIDS		
.EUGLENOPHYCEAE			
..EUGLENALES			
...EUGLENACEAE			
....TRACHELOMONAS		15	4

NOTE: D - DOMINANT ORGANISM, GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.622
CLASS 0.622
ORDER 0.622
FAMILY 2.564
GENERA 2.776

05112000 ROSEAU RIVER BELOW STATE DITCH 51, NEAR CARIBOU, MINN.--Continued

DEC. 17, 1974
1530 HOURS

IDENTIFICATION OF PHYTOPLANKTON

210 CELLS/ML

_ORGANISM__NAME_____________	_COMMON__NAME______	CELLS/ML	PER_CENT
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..PENNALES	PENNATE		
...FRAGILARIACEAE			
D ....SYNEDRA		190	92
...NAVICULACEAE	NAVICULOID		
....NAVICULA		17	8

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
FAMILY 0.414
GENERA 0.414

FEB. 4, 1975
1600 HOURS

IDENTIFICATION OF PHYTOPLANKTON

87 CELLS/ML

_ORGANISM__NAME_____________	_COMMON__NAME______	CELLS/ML	PER_CENT
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..PENNALES	PENNATE		
...FRAGILARIACEAE			
....SYNEDRA		8	9
EUGLENOPHYTA	EUGLENOIDS		
.EUGLENOPHYCEAE			
..EUGLENALES			
...EUGLENACEAE			
D ....EUGLENA		79	91

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.439
CLASS 0.439
ORDER 0.439
FAMILY 0.439
GENERA 0.439

MAR. 14, 1975
1230 HOURS

IDENTIFICATION OF PHYTOPLANKTON

140 CELLS/ML

_ORGANISM__NAME_____________	_COMMON__NAME______	CELLS/ML	PER_CENT
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..PENNALES	PENNATE		
...NAVICULACEAE	NAVICULOID		
....NAVICULA		20	14
...NITZSCHIACEAE			
....NITZSCHIA		20	14
CYANOPHYTA	BLUE-GREEN ALGAE		
.MYXOPHYCEAE			
..OSCILLATORIALES	FILAMENTOUS		
...OSCILLATORIACEAE			
D ....OSCILLATORIA		98	71

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.863
CLASS 0.863
ORDER 0.863
FAMILY 1.149
GENERA 1.149

05112000 ROSEAU RIVER BELOW STATE DITCH 51, NEAR CARIBOU, MINN.--Continued

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                         APR. 30, 1975
                          1400 HOURS

                IDENTIFICATION OF PHYTOPLANKTON

                        1,700 CELLS/ML

  _ORGANISM__NAME_______________  _COMMON__NAME_______  CELLS/ML      PER_CENT

  CHRYSOPHYTA
  .BACILLARIOPHYCEAE              DIATOMS
  ..PENNALES                      PENNATE
  ...ACHNANTHACEAE
  ....COCCONEIS                                              38             2
  ...MERIDIONACEAE
  ....MERIDION                                               38             2
  ...NAVICULACEAE                 NAVICULOID
  ....NAVICULA                                               38             2
  ...NITZSCHIACEAE
  ....NITZSCHIA                                              38             2
  ...SURIRELLACEAE
  ....SURIRELLA                                              38             2
  CYANOPHYTA                      BLUE-GREEN ALGAE
  .MYXOPHYCEAE
  ..OSCILLATORIALES               FILAMENTOUS
  ...NOSTOCACEAE
D ....ANABAENA                                            1,500            89

NOTE: D = DOMINANT ORGANISM; GREATER OR EQUAL TO 15%
      ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
      DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
                         PHYL/DIV 0.503
                            CLASS 0.503
                            ORDER 0.503
                           FAMILY 0.761
                           GENERA 0.761


                         JUNE 10, 1975
                          1130 HOURS

                IDENTIFICATION OF PHYTOPLANKTON

                        4,000 CELLS/ML

  _ORGANISM__NAME_______________  _COMMON__NAME_______  CELLS/ML      PER_CENT

  CHRYSOPHYTA
  .BACILLARIOPHYCEAE              DIATOMS
  ..CENTRALES                     CENTRIC
  ...COSCINODISCACEAE
D ....CYCLOTELLA                                          3,100            77
  ..PENNALES                      PENNATE
  ...CYMBELLACEAE
  ....RHOPALODIA                                            130             3
  ...EUNOTIACEAE
  ....EUNOTIA                                               130             3
  ...FRAGILARIACEAE
  ....SYNEDRA                                               130             3
  CYANOPHYTA                      BLUE-GREEN ALGAE
  .MYXOPHYCEAE
  ..CHROOCOCCALES                 COCCOID
  ...CHROOCOCCACEAE
  ....ANACYSTIS                                             540            13

NOTE: D = DOMINANT ORGANISM; GREATER OR EQUAL TO 15%
      ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
      DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
                         PHYL/DIV 0.567
                            CLASS 0.567
                            ORDER 1.014
                           FAMILY 1.172
                           GENERA 1.172
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05112000 ROSEAU RIVER BELOW STATE DITCH 51, NEAR CARIBOU, MINN.--Continued

JULY 22, 1975
1145 HOURS

IDENTIFICATION OF PHYTOPLANKTON

26 CELLS/ML

	_ORGANISM__NAME_______________	_COMMON__NAME_______	CELLS/ML	PER_CENT
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
	....CYCLOTELLA		1	6
D	....MELOSIRA		16	61
	..PENNALES	PENNATE		
	...ACHNANTHACEAE			
	....COCCONEIS		3	11
	...EUNOTIACEAE			
	....EUNOTIA		1	6
	...FRAGILARIACEAE			
	....SYNEDRA		1	6
	...GOMPHONEMATACEAE			
	....GOMPHONEMA		1	6
	...NAVICULACEAE	NAVICULOID		
	....CALONEIS		1	6

NOTE: D = DOMINANT ORGANISM, GREATER OR EQUAL TO 15%
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
ORDER 0.918
FAMILY 1.669
GENERA 1.945

SEP. 9, 1975
1300 HOURS

IDENTIFICATION OF PHYTOPLANKTON

130 CELLS/ML

	_ORGANISM__NAME_______________	_COMMON__NAME_______	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
D	....OOCYSTIS		27	21
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
	....CYCLOTELLA		7	5
	..PENNALES	PENNATE		
	...ACHNANTHACEAE			
D	....COCCONEIS		55	42
	...FRAGILARIACEAE			
	....SYNEDRA		7	5
	...GOMPHONEMATACEAE			
D	....GOMPHONEMA		21	16
	...NAVICULACEAE	NAVICULOID		
L	....NAVICULA			0
	...NITZSCHIACEAE			
	....NITZSCHIA		14	11
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..CHROOCOCCALES	COCCOID		
	...CHROOCOCCACEAE			
L	....ANACYSTIS			0

NOTE: D = DOMINANT ORGANISM, GREATER OR EQUAL TO 15%
L = LESS THAN 1/2%, MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER, 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYLUM 0.742
CLASS 0.742
ORDER 1.021
FAMILY 2.208
GENERA 2.208

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05124480 KAWISHIWI RIVER NEAR ELY, MINN.

(Hydrologic bench-mark station)

LOCATION.--Lat 47°55'22", long 91°32'06", in SE¼ sec.24, T.63 N., R.10 W., Lake County, at gaging station on left bank upstream from rapids, 2 mi (3 km) upstream from South Kawishiwi River, 2.2 mi (3.5 km) southwest of Fernberg Lookout Tower and 14 mi (23 km) east of Ely.

DRAINAGE AREA.--253 mi² (655 km²).

PERIOD OF RECORD.--Chemical analyses: October 1967 to current year.
Water temperatures: July 1966 to current year.

EXTREMES.--Current year:
Water temperatures: Maximum, 24°C Aug. 12; minimum, 0°C Jan. 7 to Mar. 18.

Period of record:
Water temperatures: Maximum, 24.5°C July 9, 10, 11, 12, 13, 1974; minimum, freezing point on many days during winter period.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	11.5	10.5	8.5	8.5	3.5	3.0	0.5	0.5	0.0	0.0	0.0	0.0
2	10.5	10.5	8.5	8.5	3.0	3.0	0.5	0.5	0.0	0.0	0.0	0.0
3	10.5	10.0	9.0	8.5	3.0	3.0	0.5	0.5	0.0	0.0	0.0	0.0
4	10.5	10.0	8.5	8.5	3.0	3.0	0.5	0.5	0.0	0.0	0.0	0.0
5	10.0	10.0	8.5	8.0	3.0	2.0	0.5	0.5	0.0	0.0	0.0	0.0
6	10.0	9.5	8.0	8.0	3.0	2.0	0.5	0.0	0.0	0.0	0.0	0.0
7	9.5	9.5	8.0	7.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
8	9.5	9.5	7.0	7.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
9	9.5	9.5	7.0	7.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
10	9.5	9.5	7.0	7.0	3.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0
11	9.5	9.5	7.0	6.5	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0
12	9.5	9.5	6.5	6.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0
13	9.5	9.5	6.0	5.5	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0
14	9.5	9.5	5.5	5.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0
15	9.5	9.5	5.0	5.0	2.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0
16	9.5	9.5	5.0	5.0	1.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0
17	9.5	9.0	5.0	4.5	1.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0
18	9.0	8.5	4.5	4.5	1.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0
19	8.5	8.5	4.5	4.5	1.5	1.0	0.0	0.0	0.0	0.0	---	---
20	8.5	8.0	4.5	4.5	1.0	1.0	0.0	0.0	0.0	0.0	---	---
21	8.0	7.0	4.5	4.5	1.0	1.0	0.0	0.0	0.0	0.0	---	---
22	7.0	7.0	4.5	4.0	1.0	1.0	0.0	0.0	0.0	0.0	---	---
23	7.0	7.0	4.0	4.0	1.0	1.0	0.0	0.0	0.0	0.0	---	---
24	7.0	7.0	4.0	4.0	1.0	1.0	0.0	0.0	0.0	0.0	---	---
25	7.0	7.0	4.0	4.0	1.0	1.0	0.0	0.0	0.0	0.0	---	---
26	7.0	6.5	4.0	4.0	1.0	1.0	0.0	0.0	0.0	0.0	---	---
27	7.0	6.5	4.0	4.0	1.0	1.0	0.0	0.0	0.0	0.0	---	---
28	7.0	7.0	4.0	3.5	1.0	0.5	0.0	0.0	0.0	0.0	---	---
29	8.0	7.0	3.5	3.5	0.5	0.5	0.0	0.0	---	---	---	---
30	8.5	8.0	3.5	3.5	0.5	0.5	0.0	0.0	---	---	---	---
31	8.5	8.5	---	---	0.5	0.5	0.0	0.0	---	---	---	---
MONTH	11.5	6.5	9.0	3.5	3.5	0.5	0.5	0.0	0.0	0.0	---	---

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPER- ATURE (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L) (70301)	DIS- SOLVED SOLIDS (TONS PER DAY) (70302)	DIS- SOLVED OXYGEN (MG/L) (00300)	CARBON DIOXIDE (CO2) (MG/L) (00405)	PH (UNITS) (00400)
OCT. 22...	1500	--	7.0	107	29	41	20	11.8	--	.5	7.6
FEB. 26...	1315	--	.0	83	48	36	21	8.12	12.2	13	6.1
MAY 20...	1000	20.0	18.0	660	31	33	22	59.3	9.8	4.0	6.6
1/ AUG. 12...	1500	28.0	24.0	85	28	37	25	4.52	7.7	.7	7.5

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05124480 KAWISHIWI RIVER NEAR ELY, MINN.--Continued

(Hydrologic bench-mark station)

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	---	---	8.0	7.0	23.0	22.0	22.0	22.0	23.0	22.0	---	---
2	---	---	8.0	8.0	22.0	22.0	22.0	22.0	23.0	23.0	---	---
3	---	---	8.0	8.0	22.0	22.0	22.0	21.5	23.0	23.0	---	---
4	---	---	8.5	8.0	22.0	22.0	21.5	21.5	23.0	23.0	---	---
5	---	---	9.0	8.5	---	---	21.5	21.5	23.5	23.0	---	---
6	---	---	9.5	9.0	---	---	21.5	21.0	23.5	23.5	---	---
7	---	---	10.0	9.5	---	---	21.0	21.0	23.5	23.5	---	---
8	2.0	2.0	11.0	10.0	---	---	21.0	21.0	23.5	23.5	---	---
9	2.0	2.0	11.5	11.0	---	---	21.0	20.5	23.5	23.5	---	---
10	3.0	2.0	12.0	11.5	---	---	20.5	20.5	23.5	23.5	---	---
11	3.0	3.0	13.0	12.0	---	---	20.5	20.5	23.5	23.5	---	---
12	3.0	3.0	13.5	13.0	20.5	20.5	20.5	20.5	24.0	23.5	---	---
13	3.5	3.0	14.5	13.5	20.5	20.5	20.5	20.5	---	---	---	---
14	3.5	3.5	14.5	14.5	20.5	20.5	20.5	20.5	---	---	---	---
15	3.5	3.5	15.0	14.5	20.5	20.0	20.5	20.5	---	---	---	---
16	3.5	3.5	15.5	15.0	20.0	20.0	20.5	20.5	---	---	---	---
17	4.0	3.5	16.0	15.0	20.0	20.0	21.0	20.5	---	---	---	---
18	4.0	4.0	17.0	16.0	20.0	20.0	21.0	21.0	---	---	---	---
19	4.0	4.0	18.0	17.0	20.0	19.5	21.5	21.0	---	---	---	---
20	4.5	4.0	19.0	18.0	19.5	19.5	21.5	21.5	---	---	---	---
21	5.0	4.5	20.0	19.0	19.5	19.5	21.5	21.5	---	---	---	---
22	5.5	5.0	20.5	20.0	19.5	19.0	21.5	21.5	---	---	---	---
23	5.5	5.5	21.5	20.5	19.0	19.0	21.5	21.5	---	---	---	---
24	6.5	5.5	22.0	21.5	20.0	19.0	21.5	21.5	---	---	14.0	14.0
25	6.5	6.5	23.5	22.0	21.0	20.0	21.5	21.5	---	---	14.0	14.0
26	6.5	6.5	23.5	23.5	21.0	21.0	21.5	21.5	---	---	14.0	14.0
27	7.0	6.5	23.5	23.5	22.0	21.0	21.5	21.5	---	---	14.0	14.0
28	7.0	7.0	23.5	23.5	23.0	22.0	21.5	21.5	---	---	14.0	14.0
29	7.0	7.0	23.5	23.0	23.0	22.0	21.5	21.5	---	---	14.0	14.0
30	7.0	7.0	23.0	23.0	22.0	22.0	22.0	21.5	---	---	14.5	14.0
31	---	---	23.0	23.0	---	---	22.0	22.0	---	---	---	---
MONTH	---	---	23.5	7.0	---	---	22.0	20.5	---	---	---	---
YEAR	24.0	0.0										

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	TOTAL IRON (FE) (UG/L) (01045)	TOTAL MAN-GANESE (MN) (UG/L) (01055)	ALKA-LINITY AS CACO3 (MG/L) (00410)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)
OCT. 22...	4.1	.9	1.1	.4	--	--	10	.8	3.9	.0	.00
FEB. 26...	4.7	1.3	.8	.4	300	30	8	.3	4.5	.1	.10
MAY 20...	3.0	1.5	1.6	.6	510	30	8	1.5	4.3	.1	.06
AUG. 12...	3.9	1.3	1.8	.4	190	40	11	1.6	5.6	.1	.02

DATE	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	IMME-DIATE COLI-FORM (COL. PER 100 ML) (31501)	FECAL COLI-FORM (COL. PER 100 ML) (31616)	STREP-TOCOCCI (COL-ONIES PER 100 ML) (31679)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	PER-CENT SATUR-ATION (00301)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	PERCENT SODIUM (00932)
OCT. 22...	.00	3.0	819	82	81	.06	--	14	4	.1	14
FEB. 26...	.03	3.5	1	0	0	.05	85	17	9	.1	9
MAY 20...	.03	4.2	4	2	0	.04	107	14	5	.2	19
AUG. 12...	.03	3.2	25	10	77	.05	94	15	6	.2	20

05131500 LITTLE FORK RIVER AT LITTLEFORK, MINN.

LOCATION.--Lat 48°23'55", long 93°33'56", in NW¼ sec.9, T.68 N., R.25 W., Koochiching County, at gaging station on left bank 100 ft (30 m) downstream from highway bridge at town of Littlefork, 0.3 mi (0.5 km) downstream from bridge on State Highway 217, 1.5 mi (2.4 km) upstream from Beaver Creek, and 1.8 mi (29 km) upstream from mouth.

DRAINAGE AREA.--1,730 mi² (4,480 km²), approximately.

PERIOD OF RECORD.--Chemical analyses: October 1973 to current year.
Sediment: Water year 1974, 1975 (partial-record station).

REMARKS.--Miscellaneous chemical analyses are published for water years 1967, 1969, 1971, 1973. Miscellaneous sediment analyses are published for water year 1971.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPERATURE (DEG C) (00020)	TEMPERATURE (DEG C) (00010)	INSTANTANEOUS DISCHARGE (CFS) (00061)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L) (70300)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L) (70301)	VOLATILE FILTERABLE RESIDUE (MG/L) (00520)	DISSOLVED SOLIDS (TONS PER DAY) (70302)	TURBIDITY (JTU) (00070)	COLOR (PLATINUM-COBALT UNITS) (00080)	CARBON DIOXIDE (CO2) (MG/L) (00405)
OCT. 09...	1300	10.0	6.5	1270	140	131	85	--	449	20	100	.2
NOV. 19...	1030	4.0	.5	940	110	122	69	86	310	8	100	1.3
JAN. 07...	1215	--	.0	232	190	154	117	80	96.5	5	100	4.4
FEB. 19...	1315	2.0	.5	188	215	176	132	77	89.2	10	100	6.0
APR. 01...	1145	-5.0	.0	270	225	155	127	60	113	5	60	4.7
MAY 13...	1105	19.0	14.0	4480	85	87	58	62	1050	33	140	2.0
JUNE 24...	1500	24.5	19.0	1610	115	108	68	74	469	15	100	2.7
AUG. 05...	1130	--	23.0	448	170	139	94	95	169	15	230	.9
SEP. 15...	1315	23.0	15.0	291	175	134	102	41	105	--	100	2.5

DATE	PH (UNITS) (00400)	DISSOLVED CALCIUM (CA) (MG/L) (00915)	DISSOLVED MAGNESIUM (MG) (MG/L) (00925)	DISSOLVED SODIUM (NA) (MG/L) (00930)	DISSOLVED POTASSIUM (K) (MG/L) (00935)	ALKALINITY AS CACO3 (MG/L) (00410)	DISSOLVED CHLORIDE (CL) (MG/L) (00940)	DISSOLVED SULFATE (SO4) (MG/L) (00945)	DISSOLVED FLUORIDE (F) (MG/L) (00950)	TOTAL KJELDAHL NITROGEN (N) (MG/L) (00625)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)
OCT. 09...	8.9	19	5.7	2.1	1.4	64	2.2	8.1	.1	1.1	.04
NOV. 19...	7.8	15	5.0	2.2	1.3	43	2.7	8.4	.1	.88	.03
JAN. 07...	7.6	26	7.6	3.5	1.7	90	3.0	9.8	.1	.88	.13
FEB. 19...	7.5	27	8.8	4.1	1.5	97	2.6	17	.1	.53	.15
APR. 01...	7.6	27	8.9	4.5	2.0	96	2.4	11	.4	.93	.23
MAY 13...	7.6	12	3.7	1.4	1.3	40	2.2	6.9	.1	.72	.02
JUNE 24...	7.5	16	4.8	1.8	.9	43	2.3	7.7	.1	1.1	.15
AUG. 05...	8.2	24	6.3	2.3	1.3	73	2.6	8.1	.1	1.1	.04
SEP. 15...	7.8	24	7.2	3.6	1.8	80	2.2	7.8	.1	1.0	.02

05131500 LITTLE FORK RIVER AT LITTLEFORK, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TOTAL NITRO- GEN (N) (MG/L) (00600)	TOTAL PHOS- PHORUS (P) (MG/L) (00665)	DIS- SOLVED SILICA (SIO2) (MG/L) (00955)	FECAL COLI- FORM (COL. PER 100 ML) (31616)	STREP- TOCOCCI (COL- ONIES PER 100 ML) (31679)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303)	HARD- NESS (CA,MG) (MG/L) (00900)	NON- CAR- BONATE HARD- NESS (MG/L) (00902)	SODIUM AD- SORP- TION RATIO (00931)	PERCENT SODIUM (00932)	TOTAL NITRO- GEN (NO3) (MG/L) (71887)
OCT. 09...	1.1	.06	7.4	12	48	.18	71	7	.1	6	5.0
NOV. 19...	.91	.06	8.3	84	71	.18	58	15	.1	7	4.0
JAN. 07...	.79	.06	11	--	--	.21	96	6	.2	7	3.5
FEB. 19...	.88	.05	13	1	1	.23	100	7	.2	8	3.0
APR. 01...	.88	.03	13	4	84	.21	100	8	.2	8	2.9
MAY 13...	.74	.08	3.7	5	4	.12	45	5	.1	6	3.3
JUNE 24...	1.3	.03	5.6	11	11	.15	60	16	.1	6	5.5
AUG. 05...	1.1	.01	7.8	120	6	.19	66	13	.1	5	5.0
SEP. 15...	1.0	.04	6.1	20	10	.18	90	9	.2	8	4.5

OCT. 9, 1974
1300 HOURS

IDENTIFICATION OF PHYTOPLANKTON

490 CELLS/ML

_ORGANISM__NAME_______________	_COMMON__NAME______	CELLS/ML	PER_CENT
CHLOROPHYTA	GREEN ALGAE		
.CHLOROPHYCEAE			
..CHLOROCOCCALES			
...SCENEDESMACEAE			
....CRUCIGENIA		50	10
D ....SCENEDESMUS		100	21
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..CENTRALES	CENTRIC		
...COSCINODISCACEAE			
....CYCLOTELLA		63	13
....MELOSIRA		25	5
..PENNALES	PENNATE		
...ACHNANTHACEAE			
....COCCONEIS		38	8
...CYMBELLACEAE			
....AMPHORA		25	5
...DIATOMACEAE			
....DIATOMA		13	3
...FRAGILARIACEAE			
D ....SYNEDRA		88	18
...GOMPHONEMATACEAE			
....GOMPHONEMA		38	8
...NAVICULACEAE	NAVICULOID		
....NAVICULA		50	10

NOTE: D - DOMINANT ORGANISM; GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER . 200-X MICROSCOPE
DIVERSITY INDICES. BASED ON ACTUAL COUNTS:
PHYL/DIV 0.890
CLASS 0.890
ORDER 1.462
FAMILY 2.674
GENERA 3.112

05131500 LITTLE FORK RIVER AT LITTLEFORK, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	DIS-SOLVED ARSENIC (AS) (UG/L) (01000)	SUS-PENDED ARSENIC (AS) (UG/L) (01001)	TOTAL ARSENIC (AS) (UG/L) (01002)	DIS-SOLVED CAD-MIUM (CD) (UG/L) (01025)	SUS-PENDED CAD-MIUM (CD) (UG/L) (01026)	TOTAL CAD-MIUM (CD) (UG/L) (01027)	DIS-SOLVED CHRO-MIUM (CR) (UG/L) (01030)	SUS-PENDED CHRO-MIUM (CR) (UG/L) (01031)	TOTAL CHRO-MIUM (CR) (UG/L) (01034)	DIS-SOLVED COBALT (CO) (UG/L) (01035)	SUS-PENDED COBALT (CO) (UG/L) (01036)
OCT., 09...	1300	2	0	2	1	<9	<10	0	0	0	0	<50
NOV., 19...	1030	--	--	--	--	--	--	--	--	--	--	--
JAN., 07...	1215	0	0	0	0	<10	<10	0	0	0	0	0
FEB., 19...	1315	--	--	--	--	--	--	--	--	--	--	--
APR., 01...	1145	--	--	--	--	--	--	--	--	--	--	--
MAY 13...	1145	--	--	--	--	--	--	--	--	--	--	--
JUNE 24...	1500	2	0	2	2	<8	<10	0	0	0	1	<49
AUG., 05...	1130	--	--	--	--	--	--	--	--	--	--	--
SEP., 15...	1315	2	0	2	0	<10	<10	10	0	10	0	<50

DATE	TOTAL COBALT (CO) (UG/L) (01037)	DIS-SOLVED COPPER (CU) (UG/L) (01040)	SUS-PENDED COPPER (CU) (UG/L) (01041)	TOTAL COPPER (CU) (UG/L) (01042)	DIS-SOLVED IRON (FE) (UG/L) (01046)	TOTAL IRON (FE) (UG/L) (01045)	DIS-SOLVED LEAD (PB) (UG/L) (01049)	SUS-PENDED LEAD (PB) (UG/L) (01050)	TOTAL LEAD (PB) (UG/L) (01051)	DIS-SOLVED MAN-GANESE (MN) (UG/L) (01056)	SUS-PENDED MAN-GANESE (MN) (UG/L) (01054)
OCT., 09...	<50	5	<5	<10	370	1800	3	<97	<100	0	80
NOV., 19...	--	--	--	--	--	780	--	--	--	--	--
JAN., 07...	0	1	39	40	400	1000	1	99	100	40	10
FEB., 19...	--	--	--	--	--	1300	--	--	--	--	--
APR., 01...	--	--	--	--	--	1200	--	--	--	--	--
MAY 13...	--	--	--	--	--	1800	--	--	--	--	--
JUNE 24...	<50	5	5	10	<10	1300	3	<97	<100	10	50
AUG., 05...	--	--	--	--	--	1000	--	--	--	--	--
SEP., 15...	<50	4	6	10	300	700	3	<97	<100	30	30

DATE	TOTAL MAN-GANESE (MN) (UG/L) (01055)	DIS-SOLVED MERCURY (HG) (UG/L) (71890)	SUS-PENDED MERCURY (HG) (UG/L) (71895)	TOTAL MERCURY (HG) (UG/L) (71900)	DIS-SOLVED SELE-NIUM (SE) (UG/L) (01145)	SUS-PENDED SELE-NIUM (SE) (UG/L) (01146)	TOTAL SELE-NIUM (SE) (UG/L) (01147)	DIS-SOLVED ZINC (ZN) (UG/L) (01090)	SUS-PENDED ZINC (ZN) (UG/L) (01091)	TOTAL ZINC (ZN) (UG/L) (01092)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)
OCT., 09...	80	.0	.1	.1	0	0	0	0	110	110	29
NOV., 19...	20	--	--	--	--	--	--	--	--	--	--
JAN., 07...	50	.0	.0	.0	0	2	2	20	20	40	21
FEB., 19...	70	--	--	--	--	--	--	--	--	--	--
APR., 01...	30	--	--	--	--	--	--	--	--	--	--
MAY 13...	60	--	--	--	--	--	--	--	--	--	--
JUNE 24...	60	.1	.0	.1	0	0	0	0	30	30	31
AUG., 05...	70	--	--	--	--	--	--	--	--	--	--
SEP., 15...	60	.2	.0	.2	0	0	0	20	0	20	24

05131500 LITTLE FORK RIVER AT LITTLEFORK, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TEMPER-ATURE (DEG C)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
OCT.		
09...	6.5	140
NOV.		
19...	.5	110
JAN.		
07...	.0	205
FEB.		
19...	.5	215
APR.		
01...	.0	227
01...	.0	225
20...	.3	100
22...	.3	105
23...	.0	95
24...	.3	93
25...	1.5	102
26...	1.0	100
27...	1.5	98

DATE	TEMPER-ATURE (DEG C)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
APR.		
28...	2.0	88
29...	1.0	90
30...	1.2	90
MAY		
01...	1.8	81
02...	3.5	80
03...	3.5	82
04...	5.0	85
05...	6.0	82
06...	7.0	80
07...	8.5	85
08...	9.5	85
09...	10.5	85
10...	11.5	88
11...	11.0	88
12...	11.5	90
13...	13.0	92
13...	14.0	85
14...	11.0	98

DATE	TEMPER-ATURE (DEG C)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
MAY		
15...	12.0	98
16...	14.0	98
17...	13.5	95
18...	14.0	96
19...	15.5	96
20...	17.0	99
21...	17.0	100
22...	16.5	100
23...	17.5	100
24...	16.5	100
25...	20.0	104
26...	19.0	109
27...	16.5	112
28...	17.5	114
29...	16.0	118
30...	16.5	118
31...	15.5	118
JUNE		
01...	16.0	120
02...	16.0	120
03...	18.0	121

DATE	TEMPER-ATURE (DEG C)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
JUNE		
04...	16.0	122
05...	15.5	124
06...	14.5	128
07...	14.0	119
08...	15.0	126
09...	16.0	118
10...	16.0	118
11...	--	118
12...	--	120
13...	16.0	120
14...	15.0	117
15...	15.0	118
16...	17.0	110
18...	15.0	105
19...	15.0	105
20...	20.0	105
21...	21.0	115
22...	20.0	114
23...	21.0	118

DATE	TEMPER-ATURE (DEG C)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
JUNE		
24...	19.0	115
AUG.		
05...	18.0	178

DATE	TEMPER-ATURE (DEG C)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
SEP.		
15...	15.0	175

05131500 LITTLE FORK RIVER AT LITTLEFORK, MINN.--Continued

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                              NOV. 19, 1974
                               1030 HOURS

                   IDENTIFICATION OF PHYTOPLANKTON

                              170 CELLS/ML

   _ORGANISM__NAME_______________  _COMMON__NAME______  CELLS/ML      PER_CENT

   CHLOROPHYTA                     GREEN ALGAE
   .CHLOROPHYCEAE
   ..CHLOROCOCCALES
   ...HYDRODICTYACEAE
 D ....PEDIASTRUM                                           87            50
   ...OOCYSTACEAE
   ....TETRAEDRON                                           17            10
   CHRYSOPHYTA
   .BACILLARIOPHYCEAE              DIATOMS
   ..CENTRALES                     CENTRIC
   ...COSCINODISCACEAE
 D ....CYCLOTELLA                                           35            20
   ..PENNALES                      PENNATE
   ...NITZSCHIACEAE
 D ....NITZSCHIA                                            35            20

NOTE: D = DOMINANT ORGANISM, GREATER OR EQUAL TO 15%
      ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
      DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
                        PHYL/DIV 0.971
                           CLASS 0.971
                           ORDER 1.371
                          FAMILY 1.761
                          GENERA 1.761


                              JAN.  7, 1975
                               1215 HOURS

                   IDENTIFICATION OF PHYTOPLANKTON

                               6 CELLS/ML

   _ORGANISM__NAME_______________  _COMMON__NAME______  CELLS/ML      PER_CENT

   CHLOROPHYTA                     GREEN ALGAE
   .CHLOROPHYCEAE
   ..CHLOROCOCCALES
   ...SCENEDESMACEAE
 D ....SCENEDESMUS                                           4            67
   CHRYSOPHYTA
   .BACILLARIOPHYCEAE              DIATOMS
   ..PENNALES                      PENNATE
   ...GOMPHONEMATACEAE
 D ....GOMPHONEMA                                                         17
   ...NITZSCHIACEAE
 D ....NITZSCHIA                                                          17

NOTE: D = DOMINANT ORGANISM, GREATER OR EQUAL TO 15%
      ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
      DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
                        PHYL/DIV 0.918
                           CLASS 0.918
                           ORDER 0.918
                          FAMILY 1.252
                          GENERA 1.252
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05131500 LITTLE FORK RIVER AT LITTLEFORK, MINN.--Continued

FEB. 19, 1975
1315 HOURS

IDENTIFICATION OF PHYTOPLANKTON

350 CELLS/ML

	_ORGANISM__NAME_	_COMMON__NAME_	CELLS/ML	PER_CENT
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
	....CYCLOTELLA		9	3
	..PENNALES	PENNATE		
	...GOMPHONEMATACEAE			
	....GOMPHONEMA		9	3
	...NITZSCHIACEAE			
	....NITZSCHIA		9	3
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..OSCILLATORIALES	FILAMENTOUS		
	...NOSTOCACEAE			
D	....ANABAENA		130	38
	...OSCILLATORIACEAE			
D	....LYNGBYA		190	54

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.406
CLASS 0.406
ORDER 0.480
FAMILY 1.433
GENERA 1.433

APR. 1, 1975
1145 HOURS

IDENTIFICATION OF PHYTOPLANKTON

41 CELLS/ML

	_ORGANISM__NAME_	_COMMON__NAME_	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...SCENEDESMACEAE			
D	....SCENEDESMUS		18	44
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..PENNALES	PENNATE		
	...DIATOMACEAE			
	....DIATOMA		5	11
	...FRAGILARIACEAE			
D	....SYNEDRA		9	22
	...GOMPHONEMATACEAE			
	....GOMPHONEMA		5	11
	...NAVICULACEAE	NAVICULOID		
	....NAVICULA		5	11

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.991
CLASS 0.991
ORDER 0.991
FAMILY 2.059
GENERA 2.059

05131500 LITTLE FORK RIVER AT LITTLEFORK, MINN.--Continued

MAY 13, 1975
1145 HOURS

IDENTIFICATION OF PHYTOPLANKTON

590 CELLS/ML

	_ORGANISM__NAME	_COMMON__NAME	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
	....ANKISTRODESMUS		54	9
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
	....CYCLOTELLA		54	9
D	....MELOSIRA		110	18
	..PENNALES	PENNATE		
	...CYMBELLACEAE			
	....EPITHEMIA		54	9
	...MERIDIONACEAE			
	....MERIDION		54	9
	...NAVICULACEAE	NAVICULOID		
	....NAVICULA		54	9
	...NITZSCHIACEAE			
D	....NITZSCHIA		220	36

NOTE: D = DOMINANT ORGANISM; GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.439
CLASS 0.439
ORDER 1.241
FAMILY 2.300
GENERA 2.550

JUNE 24, 1975
1500 HOURS

IDENTIFICATION OF PHYTOPLANKTON

11,000 CELLS/ML

	_ORGANISM__NAME	_COMMON__NAME	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
	....OOCYSTIS		1,300	12
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
	....MELOSIRA		650	6
	..PENNALES	PENNATE		
	...NITZSCHIACEAE			
	....NITZSCHIA		320	3
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..CHROOCOCCALES	COCCOID		
	...CHROOCOCCACEAE			
D	....ANACYSTIS		4,500	41
	..OSCILLATORIALES	FILAMENTOUS		
	...OSCILLATORIACEAE			
D	....LYNGBYA		2,600	23
D	....OSCILLATORIA		1,700	16

NOTE: D = DOMINANT ORGANISM; GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.930
CLASS 0.930
ORDER 1.807
FAMILY 1.807
GENERA 2.184

05131500 LITTLE FORK RIVER AT LITTLEFORK, MINN.--Continued

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                    AUG. 5, 1975
                     1130 HOURS

            IDENTIFICATION OF PHYTOPLANKTON

                    9,300 CELLS/ML

 _ORGANISM__NAME______________   _COMMON__NAME______  CELLS/ML     PER_CENT

 CHLOROPHYTA                     GREEN ALGAE
 .CHLOROPHYCEAE
 ..CHLOROCOCCALES
 ...SCENEDESMACEAE
 ....CRUCIGENIA                                          1,200           13
 CHRYSOPHYTA
 .BACILLARIOPHYCEAE              DIATOMS
 ..CENTRALES                     CENTRIC
 ...COSCINODISCACEAE
 ....MELOSIRA                                              250            3
 ..PENNALES                      PENNATE
 ...NAVICULACEAE                 NAVICULOID
L ....AMPHIPRORA                                                          0
 ...NITZSCHIACEAE
 ....NITZSCHIA                                             250            3
 ...TABELLARIACEAE
L ....TABELLARIA                                                          0
 CYANOPHYTA                      BLUE-GREEN ALGAE
 .MYXOPHYCEAE
 ..CHROOCOCCALES                 COCCOID
 ...CHROOCOCCACEAE
D ....ANACYSTIS                                          7,600           81

NOTE: D - DOMINANT ORGANISM, GREATER OR EQUAL TO 15%
      L - LESS THEN 1%, MAY NOT HAVE BEEN ACTUALLY COUNTED
      SAMPLING METHOD: PLASTIC SLIDES, RANDOM
      ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
      DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
                          PHYL/DIV 0.856
                             CLASS 0.856
                             ORDER 0.909
                            FAMILY 0.909
                            GENERA 0.909
```

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

PERIPHYTON

Date	Length of exposure (days)	Biomass (gm/m^2) Dry weight	Ash weight	Chlorophyll a (mg/m^2)	Chlorophyll b (mg/m^2)	Biomass pigment ratio	Sampling method
Nov 19	41	2.3	0.8	0.1	0.1	15000	Polyethylene strip
Feb 19	43	0.6	0.5	0.0	0.1	0.0	Polyethylene strip
Sep 15	41	1.6	0.9	1.2	0.2	580	Polyethylene strip

05131500 LITTLE FORK RIVER AT LITTLEFORK, MINN.--Continued

SEP. 15, 1975
1315 HOURS

IDENTIFICATION OF PHYTOPLANKTON

6,900 CELLS/ML

	_ORGANISM__NAME_______________	_COMMON__NAME______	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
	....OOCYSTIS		47	1
L	....QUADRIGULA			0
	...SCENEDESMACEAE			
L	....CRUCIGENIA			0
	....SCENEDESMUS		560	8
	..TETRASPORALES			
	...PALMELLACEAE			
	....SPHAEROCYSTIS		370	5
	..ZYGNEMATALES			
	...DESMIDIACEAE	PLACODERM DESMIDS		
	....COSMARIUM		47	1
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
	....CYCLOTELLA		610	9
	....MELOSIRA		140	2
	..PENNALES	PENNATE		
	...ACHNANTHACEAE			
	....COCCONEIS		93	1
	...FRAGILARIACEAE			
	....SYNEDRA		47	1
	...GOMPHONEMATACEAE			
	....GOMPHONEMA		47	1
	...NAVICULACEAE	NAVICULOID		
	....NAVICULA		140	2
	...NITZSCHIACEAE			
	....NITZSCHIA		230	3
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..CHROOCOCCALES	COCCOID		
	...CHROOCOCCACEAE			
	....AGMENELLUM		560	8
D	....ANACYSTIS		3,900	57
	EUGLENOPHYTA	EUGLENOIDS		
	.EUGLENOPHYCEAE			
	..EUGLENALES			
	...EUGLENACEAE			
	....TRACHELOMONAS		47	1

NOTE: D - DOMINANT ORGANISM, GREATER OR EQUAL TO 15%
L - LESS THEN 1%, MAY NOT HAVE BEEN ACTUALLY COUNTED

ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES: (BASED ON ACTUAL COUNTS)
PHYL/DIV 1.316
CLASS 1.316
ORDER 1.681
FAMILY 1.883
GENERA 2.314

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	TEMPER-ATURE (DEG C)	INSTAN-TANEOUS DIS-CHARGE (CFS)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .062 MM
SEP. 15...	1600	15.0	291	16	13	75

05131500 LITTLE FORK RIVER AT LITTLEFORK, MINN.--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL			MAY			JUNE		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	270	19	14	16600	159	7130	1420	28	107
2	270	---	---	15500	146	6110	1330	26	93
3	270	---	---	14300	140	5410	1250	38	128
4	275	---	---	13200	144	5130	1180	29	92
5	275	---	---	12000	127	4110	1260	23	78
6	280	---	---	10800	115	3350	1640	30	133
7	280	---	---	9480	118	3020	1970	44	234
8	285	---	---	8260	98	2190	2000	47	254
9	290	---	---	7220	98	1910	1800	40	194
10	300	---	---	6320	86	1470	1600	30	130
11	310	---	---	5600	78	1180	1430	26	100
12	320	---	---	4960	67	897	1350	26	95
13	330	---	---	4400	68	808	1520	29	119
14	350	---	---	3950	66	704	1970	37	197
15	400	---	---	3830	59	610	2410	58	377
16	580	---	---	4120	68	756	2340	54	341
17	900	---	---	4080	67	738	2140	55	318
18	1500	---	---	3770	54	550	2150	55	319
19	2500	---	---	3460	46	430	2020	40	218
20	3800	94	964	3170	48	411	1990	40	215
21	6200	204	3410	2940	47	373	1950	36	190
22	8100	316	6910	2830	45	344	1950	37	195
23	10200	165	4540	2850	45	346	1820	33	162
24	13000	188	6600	2740	45	333	1640	34	151
25	15000	278	11300	2570	45	312	1450	30	117
26	15600	246	10400	2360	45	287	1390	25	94
27	16000	277	12000	2140	40	231	1670	30	135
28	16000	230	9940	1930	36	188	1700	42	193
29	16500	239	10600	1790	30	145	1820	53	260
30	17200	191	8870	1640	30	133	2040	53	292
31	---	---	---	1540	26	108	---	---	---

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	2200	63	374	454	---	---	364	---	---
2	3720	151	1520	522	---	---	326	---	---
3	5670	222	3400	543	---	---	292	---	---
4	5980	201	3250	490	---	---	282	---	---
5	5160	123	1710	450	27	33	268	---	---
6	4270	105	1210	427	---	---	256	---	---
7	5150	175	2430	402	---	---	266	---	---
8	5060	122	1670	374	---	---	270	---	---
9	4170	95	1070	353	---	---	272	---	---
10	3440	76	706	326	---	---	292	---	---
11	3000	70	567	314	---	---	334	---	---
12	2580	90	627	304	---	---	348	---	---
13	2150	53	308	294	---	---	332	---	---
14	1840	40	199	283	---	---	311	---	---
15	1590	38	163	280	---	---	293	16	13
16	1390	34	128	277	---	---	272	---	---
17	1220	38	125	267	---	---	255	---	---
18	1080	59	172	254	---	---	254	---	---
19	960	36	93	245	---	---	259	---	---
20	874	34	80	242	---	---	269	---	---
21	806	28	61	240	---	---	287	---	---
22	753	25	51	238	---	---	342	---	---
23	701	---	---	241	---	---	460	---	---
24	674	---	---	257	---	---	552	---	---
25	625	---	---	265	---	---	558	---	---
26	591	---	---	267	---	---	525	---	---
27	565	---	---	303	---	---	484	---	---
28	533	---	---	359	---	---	449	---	---
29	503	---	---	389	---	---	415	---	---
30	479	---	---	379	---	---	388	---	---
31	456	---	---	363	---	---	---	---	---

05132000 BIG FORK RIVER AT BIG FALLS, MINN.

LOCATION.--Lat 48°11'45", long 93°48'25", in sec.35, T.155 N., R.25 W., Koochiching County, on left bank at village of Big Falls, 700 ft (213 m) downstream from falls, 0.3 mi (0.5 km) downstream from bridge on U.S. Highway 71, and 4.8 mi (7.7 km) upstream from Sturgeon River.

DRAINAGE AREA.--1,460 mi² (3,780 km²), approximately.

PERIOD OF RECORD.--Chemical analyses: Water year 1973 (partial-record station), October 1974 to September 1975.

REMARKS.--Miscellaneous samples of chemical data published for water years 1968, 1971, 1972, 1974.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	DIS-SOLVED ARSENIC (AS) (UG/L) (01000)	SUS-PENDED ARSENIC (AS) (UG/L) (01001)	TOTAL ARSENIC (AS) (UG/L) (01002)	DIS-SOLVED CAD-MIUM (CD) (UG/L) (01025)	SUS-PENDED CAD-MIUM (CD) (UG/L) (01026)	TOTAL CAD-MIUM (CD) (UG/L) (01027)	DIS-SOLVED CHRO-MIUM (CR) (UG/L) (01030)	SUS-PENDED CHRO-MIUM (CR) (UG/L) (01031)	TOTAL CHRO-MIUM (CR) (UG/L) (01034)	DIS-SOLVED COBALT (CO) (UG/L) (01035)	SUS-PENDED COBALT (CO) (UG/L) (01036)
OCT.												
08...	1200	2	0	2	1	<9	<10	0	0	0	0	<50
JAN.												
06...	1415	0	0	0	2	<8	<10	0	0	0	0	50
JUNE												
23...	1400	2	0	2	1	<9	<10	0	0	0	1	<49
SEP.												
15...	1150	2	0	2	0	<10	<10	0	10	10	0	<50

DATE	TOTAL COBALT (CO) (UG/L) (01037)	DIS-SOLVED COPPER (CU) (UG/L) (01040)	SUS-PENDED COPPER (CU) (UG/L) (01041)	TOTAL COPPER (CU) (UG/L) (01042)	DIS-SOLVED IRON (FE) (UG/L) (01046)	TOTAL IRON (FE) (UG/L) (01045)	DIS-SOLVED LEAD (PB) (UG/L) (01049)	SUS-PENDED LEAD (PB) (UG/L) (01050)	TOTAL LEAD (PB) (UG/L) (01051)	DIS-SOLVED MAN-GANESE (MN) (UG/L) (01056)	SUS-PENDED MAN-GANESE (MN) (UG/L) (01054)
OCT.											
08...	<50	4	6	10	240	660	5	<95	<100	10	30
JAN.											
06...	50	8	22	30	120	430	3	<97	<100	30	20
JUNE											
23...	<50	3	7	10	240	580	4	<96	<100	20	--
SEP.											
15...	<50	1	9	10	70	170	6	<94	<100	10	20

DATE	TOTAL MAN-GANESE (MN) (UG/L) (01055)	DIS-SOLVED MERCURY (HG) (UG/L) (71890)	SUS-PENDED MERCURY (HG) (UG/L) (71895)	TOTAL MERCURY (HG) (UG/L) (71900)	DIS-SOLVED SELE-NIUM (SE) (UG/L) (01145)	SUS-PENDED SELE-NIUM (SE) (UG/L) (01146)	TOTAL SELE-NIUM (SE) (UG/L) (01147)	DIS-SOLVED ZINC (ZN) (UG/L) (01090)	SUS-PENDED ZINC (ZN) (UG/L) (01091)	TOTAL ZINC (ZN) (UG/L) (01092)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)
OCT.											
08...	40	.0	.0	.0	0	0	0	10	100	110	25
JAN.											
06...	50	.0	.0	.0	0	1	1	20	20	40	16
JUNE											
23...	--	.0	.0	.0	0	0	0	0	40	40	21
SEP.											
15...	30	--	--	.0	0	0	0	10	10	20	14

DATE	TIME	TEMPER-ATURE (DEG C)	INSTAN-TANEOUS DIS-CHARGE (CFS)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)
OCT.					
08...	1155	5.5	1040	11	31
NOV.					
18...	1430	.5	572	16	25
JAN.					
06...	1415	.5	323	10	8.7
FEB.					
18...	1600	.5	218	8	4.7
MAR.					
31...	1230	.0	269	18	13

DATE	TIME	TEMPER-ATURE (DEG C)	INSTAN-TANEOUS DIS-CHARGE (CFS)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)
MAY					
12...	1530	14.0	3960	24	257
JUNE					
23...	1400	20.0	1340	15	54
AUG.					
04...	1800	23.5	1010	26	71
SEP.					
15...	1130	13.0	467	6	7.6

05132000 BIG FORK RIVER AT BIG FALLS, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPERATURE (DEG C) (00020)	TEMPERATURE (DEG C) (00010)	INSTANTANEOUS DISCHARGE (CFS) (00061)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L) (70300)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L) (70301)	DISSOLVED SOLIDS (TONS PER DAY) (70302)	TURBIDITY (JTU) (00070)	CARBON DIOXIDE (CO2) (MG/L) (00405)	PH (UNITS) (00400)
OCT.											
08...	1200	6.0	5.5	1040	175	134	100	376	7	2.1	7.9
NOV.											
18...	1430	1.5	.5	572	180	154	110	238	5	1.7	8.0
JAN.											
06...	1415	--	.5	323	270	189	160	165	3	4.4	7.8
FEB.											
18...	1600	.5	.5	218	295	193	170	114	6	9.2	7.5
MAR.											
31...	1300	-5.0	.0	269	325	201	175	146	3	5.9	7.7
MAY											
12...	1530	20.0	14.0	3960	135	103	73	1100	12	1.4	7.9
JUNE											
23...	1400	24.0	20.0	1340	185	135	99	488	6	2.7	7.8
AUG.											
04...	1800	--	23.5	1010	210	161	125	439	11	1.0	8.3
SEP.											
15...	1150	16.0	13.0	467	230	152	--	192	4	52	6.6

DATE	DISSOLVED CALCIUM (CA) (MG/L) (00915)	DISSOLVED MAGNESIUM (MG) (MG/L) (00925)	DISSOLVED SODIUM (NA) (MG/L) (00930)	DISSOLVED POTASSIUM (K) (MG/L) (00935)	ALKALINITY AS CACO3 (MG/L) (00410)	DISSOLVED CHLORIDE (CL) (MG/L) (00940)	DISSOLVED SULFATE (SO4) (MG/L) (00945)	DISSOLVED FLUORIDE (F) (MG/L) (00950)	TOTAL KJELDAHL NITROGEN (N) (MG/L) (00625)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL NITROGEN (N) (MG/L) (00600)
OCT.											
08...	24	6.7	2.0	1.8	85	1.7	5.4	.0	1.3	.02	1.3
NOV.											
18...	28	8.4	2.5	1.0	88	2.0	7.2	.1	.34	.03	.37
JAN.											
06...	38	11	4.0	1.9	141	3.9	6.9	.0	.69	.41	1.1
FEB.											
18...	42	12	3.4	2.3	149	2.0	6.4	.1	.89	.14	1.0
MAR.											
31...	43	13	4.4	2.3	152	2.2	7.1	.2	.59	.20	.79
MAY											
12...	18	5.6	1.8	1.5	58	2.0	6.8	.1	.65	.04	.69
JUNE											
23...	24	7.6	1.9	.8	86	2.0	4.7	.1	.93	.05	.98
AUG.											
04...	28	9.3	4.5	1.6	103	1.4	5.8	.1	1.3	.06	1.4
SEP.											
15...	31	--	2.5	1.6	107	1.4	4.5	.1	.65	.01	.66

DATE	TOTAL PHOSPHORUS (P) (MG/L) (00665)	DISSOLVED SILICA (SIO2) (MG/L) (00955)	FECAL COLIFORM (COL. PER 100 ML) (31616)	STREPTOCOCCI (COLONIES PER 100 ML) (31679)	DISSOLVED SOLIDS (TONS PER AC-FT) (70303)	HARDNESS (CA,MG) (MG/L) (00900)	NONCARBONATE HARDNESS (MG/L) (00902)	SODIUM ADSORPTION RATIO (00931)	PERCENT SODIUM (00932)	TOTAL NITROGEN (NO3) (MG/L) (71887)
OCT.										
08...	.05	7.1	92	150	.18	88	2	.1	5	5.8
NOV.										
18...	.03	8.3	84	419	.21	100	17	.1	5	1.6
JAN.										
06...	.02	11	81	0	.26	140	0	.1	6	4.9
FEB.										
18...	.03	12	7	1	.26	150	5	.1	5	4.6
MAR.										
31...	.04	12	8	--	.27	160	9	.2	6	3.5
MAY										
12...	.02	4.6	0	3	.14	68	10	.1	5	3.1
JUNE										
23...	.02	5.8	18	19	.18	91	5	.1	4	4.3
AUG.										
04...	.03	13	170	12	.22	110	6	.2	8	6.0
SEP.										
15...	.03	10	12	7	.21	--	--	--	0	2.9

LAKE OF THE WOODS BASIN

05132000 BIG FORK RIVER AT BIG FALLS, MINN.--Continued

NOV. 14, 1974
1430 HOURS

IDENTIFICATION OF PHYTOPLANKTON

280 CELLS/ML

_ORGANISM__NAME	_COMMON__NAME	CELLS/ML	PER_CENT
CHLOROPHYTA	GREEN ALGAE		
.CHLOROPHYCEAE			
..CHLOROCOCCALES			
...OOCYSTACEAE			
....ANKISTRODESMUS		28	10
...SCENEDESMACEAE			
....SCENEDESMUS		28	10
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..CENTRALES	CENTRIC		
...COSCINODISCACEAE			
D ....CYCLOTELLA		41	15
..PENNALES	PENNATE		
...FRAGILARIACEAE			
D ....ASTERIONELLA		69	25
...GOMPHONEMATACEAE			
....GOMPHONEMA		14	5
...NAVICULACEAE	NAVICULOID		
....NAVICULA		14	5
...NITZSCHIACEAE			
....NITZSCHIA		28	10
.CHRYSOPHYCEAE	YELLOW-BROWN ALGAE		
..CHRYSOMONADALES			
...OCHROMONADACEAE			
D ....DINOBRYON		55	20

NOTE: D = DOMINANT ORGANISM, GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.722
CLASS 1.371
ORDER 1.858
FAMILY 2.806
GENERA 2.806

JAN. 6, 1975
1415 HOURS

IDENTIFICATION OF PHYTOPLANKTON

58 CELLS/ML

_ORGANISM__NAME	_COMMON__NAME	CELLS/ML	PER_CENT
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..PENNALES	PENNATE		
...ACHNANTHACEAE			
D ....COCCONEIS		16	27
...FRAGILARIACEAE			
....ASTERIONELLA		5	9
....SYNEDRA		5	9
...GOMPHONEMATACEAE			
....GOMPHONEMA		5	9
...NAVICULACEAE	NAVICULOID		
D ....NAVICULA		11	18
...NITZSCHIACEAE			
D ....NITZSCHIA		16	27

NOTE: D = DOMINANT ORGANISM, GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
FAMILY 2.231
GENERA 2.413

05132000 BIG FORK RIVER AT BIG FALLS, MINN.--Continued

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                         FEB. 18, 1975
                          1600 HOURS

                 IDENTIFICATION OF PHYTOPLANKTON

                          91 CELLS/ML

  _ORGANISM__NAME_______________  _COMMON__NAME_______  CELLS/ML      PER_CENT

  CHRYSOPHYTA
  .BACILLARIOPHYCEAE              DIATOMS
  ..PENNALES                      PENNATE
  ...ACHNANTHACEAE
  ....COCCONEIS                                                6             6
  ...CYMBELLACEAE
  ....RHOPALODIA                                               6             6
  ...EUNOTIACEAE
  ....EUNOTIA                                                  6             6
  ...FRAGILARIACEAE
D ....SYNEDRA                                                 23            25
  ...NAVICULACEAE                 NAVICULOID
D ....NAVICULA                                                34            37
  ...NITZSCHIACEAE
D ....NITZSCHIA                                               17            19
NOTE: D - DOMINANT ORGANISM; GREATER OR EQUAL TO 15%
      ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
      DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
                         FAMILY 2.233
                         GENERA 2.233
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                         MAR. 31, 1975
                          1300 HOURS

                 IDENTIFICATION OF PHYTOPLANKTON

                          130 CELLS/ML

  _ORGANISM__NAME_______________  _COMMON__NAME_______  CELLS/ML      PER_CENT

  CHRYSOPHYTA
  .BACILLARIOPHYCEAE              DIATOMS
  ..CENTRALES                     CENTRIC
  ...COSCINODISCACEAE
  ....CYCLOTELLA                                               7             6
D ....MELOSIRA                                                44            33
  ..PENNALES                      PENNATE
  ...ACHNANTHACEAE
  ....COCCONEIS                                                7             6
  ...CYMBELLACEAE
  ....CYMBELLA                                                 7             6
  ...FRAGILARIACEAE
  ....SYNEDRA                                                  7             6
  ...NAVICULACEAE                 NAVICULOID
D ....NAVICULA                                                44            33
  CYANOPHYTA                      BLUE-GREEN ALGAE
  .MYXOPHYCEAE
  ..CHROOCOCCALES                 COCCOID
  ...CHROOCOCCACEAE
  ....ANACYSTIS                                               15            11
NOTE: D - DOMINANT ORGANISM; GREATER OR EQUAL TO 15%
      ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
      DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
                       PHYL/DIV 0.503
                          CLASS 0.503
                          ORDER 1.382
                         FAMILY 2.105
                         GENERA 2.336
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QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

PERIPHYTON

Date	Length of exposure (days)	Biomass (g/m^2) Dry weight	Biomass (g/m^2) Ash weight	Chlorophyll a (mg/m^2)	Chlorophyll b (mg/m^2)	Biomass pigment ratio	Sampling method
Nov 18	41	3.8	1.5	0.5	0.1	4600	Polyethylene strip
Feb 18	43	1.8	0.9	0.2	0.1	4500	Polyethylene strip
Jun 23	42	16	15	15	1.4	67	Polyethylene strip
Aug 04	42	3.0	2.5	10	1.2	44	Polyethylene strip
Sep 15	42	11	7.7	8.6	1.8	380	Polyethylene strip

05132000 BIG FORK RIVER AT BIG FALLS, MINN.--Continued

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                              MAY 12, 1975
                              1530 HOURS

                     IDENTIFICATION OF PHYTOPLANKTON

                             390 CELLS/ML

  _ORGANISM__NAME_______________  _COMMON__NAME______  CELLS/ML      PER_CENT

  CHRYSOPHYTA
  .BACILLARIOPHYCEAE              DIATOMS
  ..CENTRALES                     CENTRIC
  ...COSCINODISCACEAE
D ....CYCLOTELLA                                          140            37
  ..PENNALES                      PENNATE
  ...ACHNANTHACEAE
  ....COCCONEIS                                            26             7
  ...FRAGILARIACEAE
  ....HANNAEA                                              13             3
  ....SYNEDRA                                              52            13
  ...MERIDIONACEAE
  ....MERIDION                                             26             7
  ...NAVICULACEAE                 NAVICULOID
  ....NAVICULA                                             26             7
  CYANOPHYTA                      BLUE-GREEN ALGAE
  .MYXOPHYCEAE
  ..CHROOCOCCALES                 COCCOID
  ...CHROOCOCCACEAE
D ....ANACYSTIS                                           100            27
NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
      ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
      DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
                        PHYL/DIV 0.837
                           CLASS 0.837
                           ORDER 1.570
                          FAMILY 2.251
                          GENERA 2.372
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                              JUNE 23, 1975
                              1400 HOURS

                     IDENTIFICATION OF PHYTOPLANKTON

                             950 CELLS/ML

  _ORGANISM__NAME_______________  _COMMON__NAME______  CELLS/ML      PER_CENT

  CHLOROPHYTA                     GREEN ALGAE
  .CHLOROPHYCEAE
  ..CHLOROCOCCALES
  ...OOCYSTACEAE
  ....ANKISTRODESMUS                                       46             5
  ....KIRCHNERIELLA                                        23             2
  ...SCENEDESMACEAE
D ....SCENEDESMUS                                         230            24
  CHRYSOPHYTA
  .BACILLARIOPHYCEAE              DIATOMS
  ..CENTRALES                     CENTRIC
  ...COSCINODISCACEAE
  ....CYCLOTELLA                                           46             5
  ....MELOSIRA                                             46             5
  ..PENNALES                      PENNATE
  ...ACHNANTHACEAE
  ....ACHNANTHES                                           23             2
  ....COCCONEIS                                            46             5
  ...GOMPHONEMATACEAE
  ....GOMPHONEMA                                           23             2
  ...NAVICULACEAE                 NAVICULOID
D ....NAVICULA                                            140            15
  ...NITZSCHIACEAE
D ....NITZSCHIA                                           140            15
  CYANOPHYTA                      BLUE-GREEN ALGAE
  .MYXOPHYCEAE
  ..CHROOCOCCALES                 COCCOID
  ...CHROOCOCCACEAE
D ....ANACYSTIS                                           180            20
NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
      ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
      DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
                        PHYL/DIV 1.491
                           CLASS 1.491
                           ORDER 1.843
                          FAMILY 2.778
                          GENERA 3.010
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05132000 BIG FORK RIVER AT BIG FALLS, MINN.--Continued

AUG. 4. 1975
1800 HOURS

IDENTIFICATION OF PHYTOPLANKTON

510 CELLS/ML

	_ORGANISM__NAME______________	_COMMON__NAME______	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
D	....ANKISTRODESMUS		130	25
	...SCENEDESMACEAE			
D	....SCENEDESMUS		210	42
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
	....MELOSIRA		21	4
	..PENNALES	PENNATE		
	...ACHNANTHACEAE			
	....COCCONEIS		21	4
	...NAVICULACEAE	NAVICULOID		
	....NAVICULA		43	8
	...NITZSCHIACEAE			
D	....NITZSCHIA		86	17

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
SAMPLING METHOD: PLASTIC SLIDES. RANDOM
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER . 200-X MICROSCOPE
DIVERSITY INDICES. BASED ON ACTUAL COUNTS:
PHYL/DIV 0.918
CLASS 0.918
ORDER 1.099
FAMILY 2.138
GENERA 2.138

SEP. 15. 1975
1150 HOURS

IDENTIFICATION OF PHYTOPLANKTON

400 CELLS/ML

	_ORGANISM__NAME______________	_COMMON__NAME______	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
L	....ANKISTRODESMUS			0
L	....NEPHROCYTIUM			0
	....OOCYSTIS		26	6
	...SCENEDESMACEAE			
D	....CRUCIGENIA		150	39
D	....SCENEDESMUS		130	32
	..VOLVOCALES			
	...VOLVOCACEAE			
L	....GONIUM			0
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
	....CYCLOTELLA		6	2
	....MELOSIRA		19	5
	..PENNALES	PENNATE		
	...ACHNANTHACEAE			
	....COCCONEIS		32	8
	...GOMPHONEMATACEAE			
	....GOMPHONEMA		13	3
	...NAVICULACEAE	NAVICULOID		
	....NAVICULA		6	2
	...NITZSCHIACEAE			
	....NITZSCHIA		13	3

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
L - LESS THEN 1%: MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER . 200-X MICROSCOPE
DIVERSITY INDICES. BASED ON ACTUAL COUNTS:
PHYL/DIV 0.771
CLASS 0.771
ORDER 0.966
FAMILY 1.570
GENERA 2.328

05267000 MISSISSIPPI RIVER NEAR ROYALTON, MINN.

LOCATION.--Lat 45°51'40", long 94°21'30", in lot 2, sec.20, T.39 N., R.32 W., Morrison County, at plant of Minnesota Power and Light Co., 4 mi (6.4 km) northwest of Royalton, 4.5 mi (7.2 km) downstream from Swan River, and at mile 956 (1,538 km) upstream from Ohio River. Sampling point is 3 mi (4.8 km) downstream from plant.

DRAINAGE AREA.--11,600 mi² (30,000 km²), approximately.

PERIOD OF RECORD.--Chemical analyses: October 1963 to July 1966, January to September 1975.
Sediment: January to September 1975.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	TEMPER-ATURE (DEG C)	DIS-CHARGE (CFS)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)
JAN., 28...	1000	.0	4010	50	541
MAR., 05...	0940	.5	4030	2	23
APR., 07...	1230	1.0	5210	6	84
MAY 14...	1130	19.0	21900	21	1240
JUNE 09...	1255	18.0	7400	22	440
JULY 19...	1225	25.5	10900	13	383
AUG., 27...	1330	21.5	3930	5	53

JAN. 22, 1975
1230 HOURS

IDENTIFICATION OF PHYTOPLANKTON

2,100 CELLS/ML

_ORGANISM__NAME_______________	_COMMON__NAME______	CELLS/ML	PER_CENT
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..CENTRALES	CENTRIC		
...COSCINODISCACEAE			
....CYCLOTELLA		21	1
....MELOSIRA		120	6
..PENNALES	PENNATE		
...ACHNANTHACEAE			
....ACHNANTHES		21	1
...CYMBELLACEAE			
....CYMBELLA		21	1
...FRAGILARIACEAE			
....ASTERIONELLA		21	1
...GOMPHONEMATACEAE			
....GOMPHONEMA		21	1
...NITZSCHIACEAE			
....NITZSCHIA		41	2
CYANOPHYTA	BLUE-GREEN ALGAE		
.MYXOPHYCEAE			
..OSCILLATORIALES	FILAMENTOUS		
...OSCILLATORIACEAE			
D ....LYNGBYA		1,600	74
....PHORMIDIUM		290	14

NOTE: D - DOMINANT ORGANISM; GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.550
CLASS 0.550
ORDER 0.677
FAMILY 0.810
GENERA 1.398

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

PERIPHYTON

Date	Length of exposure (days)	Biomass (g/m²) Dry weight	Biomass (g/m²) Ash weight	Chlorophyll a (mg/m²)	Chlorophyll b (mg/m²)	Biomass pigment ratio	Sampling method
June 09	26	3.2	2.5	0.1	0.1	7000	Polyethylene strip

05267000 MISSISSIPPI RIVER NEAR ROYALTON, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPER-ATURE (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	INSTAN-TANEOUS DIS-CHARGE (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	TUR-BID-ITY (JTU) (00070)	DIS-SOLVED OXYGEN (MG/L) (00300)	CARBON DIOXIDE (CO2) (MG/L) (00405)	PH (UNITS) (00400)
JAN. 22...	1230	-15.0	.0	4200	300	185	170	2100	8	--	9.5	7.5
MAR. 05...	0930	-2.0	.0	4070	354	305	182	3350	2	--	4.9	7.8
APR. 07...	1100	1.0	1.0	5210	305	190	175	2670	2	--	7.5	7.6
MAY 14...	1130	10.0	19.0	22490	190	121	104	7160	4	--	1.3	8.1
JUNE 09...	1200	--	18.0	7640	245	157	137	3240	10	8.8	2.9	7.9
JULY 19...	1200	--	25.5	10920	245	171	132	5040	6	--	2.8	7.9
AUG. 29...	1345	24.0	21.0	4200	295	184	163	2090	3	--	1.4	8.3

MAR. 5, 1975
0930 HOURS

IDENTIFICATION OF PHYTOPLANKTON

350 CELLS/ML

ORGANISM NAME	COMMON NAME	CELLS/ML	PER CENT
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..CENTRALES	CENTRIC		
...COSCINODISCACEAE			
....CYCLOTELLA		10	3
..PENNALES	PENNATE		
...ACHNANTHACEAE			
....COCCONEIS		19	6
...DIATOMACEAE			
....DIATOMA		19	6
...FRAGILARIACEAE			
....FRAGILARIA		19	6
....SYNEDRA		10	3
...GOMPHONEMATACEAE			
....GOMPHONEMA		29	8
...NAVICULACEAE	NAVICULOID		
D ....NAVICULA		58	17
...NITZSCHIACEAE			
....NITZSCHIA		10	3
...ACHNANTHACEAE			
....RHOICOSPHENIA		10	3
CYANOPHYTA	BLUE-GREEN ALGAE		
.MYXOPHYCEAE			
..OSCILLATORIALES	FILAMENTOUS		
...NOSTOCACEAE			
....ANABAENA		29	8
...OSCILLATORIACEAE			
D ....OSCILLATORIA		140	39

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.998
CLASS 0.998
ORDER 1.155
FAMILY 2.751
GENERA 2.828

05267000 MISSISSIPPI RIVER NEAR ROYALTON, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	ALKA-LINITY AS CACO3 (MG/L) (00410)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L) (00625)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL NITRO-GEN (N) (MG/L) (00600)
JAN. 22...	38	13	5.3	1.8	154	1.5	6.6	.2	.62	.01	.63
MAR. 05...	42	15	5.5	2.4	160	2.6	6.6	.1	.50	.19	.69
APR. 07...	40	15	4.8	2.2	153	3.0	6.8	.1	.51	.21	.72
MAY 14...	26	7.7	2.8	1.9	82	2.6	7.7	.1	.84	.01	.85
JUNE 09...	32	11	3.6	1.5	120	2.0	7.2	.1	3.9	.06	4.0
JULY 19...	31	10	3.4	1.3	112	1.9	5.2	.1	1.1	.16	1.3
AUG. 29...	38	13	5.0	1.5	145	2.3	6.6	.2	.57	.07	.64

APR. 7, 1975
1100 HOURS

IDENTIFICATION OF PHYTOPLANKTON

250 CELLS/ML

	_ORGANISM__NAME_______________	_COMMON__NAME______	CELLS/ML	PER_CENT
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
	....CYCLOTELLA		6	2
	..PENNALES	PENNATE		
	...ACHNANTHACEAE			
	....ACHNANTHES		6	2
	....COCCONEIS		29	11
	...DIATOMACEAE			
	....DIATOMA		12	5
	...FRAGILARIACEAE			
	....ASTERIONELLA		29	11
	....SYNEDRA		29	11
	...GOMPHONEMATACEAE			
D	....GOMPHONEMA		46	18
	...NAVICULACEAE	NAVICULOID		
	....NAVICULA		17	7
	...NITZSCHIACEAE			
	....NITZSCHIA		12	5
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..OSCILLATORIALES	FILAMENTOUS		
	...NOSTOCACEAE			
D	....ANABAENA		69	27

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER . 200-X MICROSCOPE
DIVERSITY INDICES. BASED ON ACTUAL COUNTS:
PHYL/DIV 0.845
CLASS 0.845
ORDER 0.991
FAMILY 2.630
GENERA 2.946

05267000 MISSISSIPPI RIVER NEAR ROYALTON, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	FECAL COLI-FORM (COL. PER 100 ML) (31616)	STREP-TOCOCCI (COL-ONIES PER 100 ML) (31679)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	PER-CENT SATUR-ATION (00301)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	PERCENT SODIUM (00932)	TOTAL NITRO-GEN (NO3) (MG/L) (71887)
JAN. 22...	.04	11	64	9	.25	--	150	0	.2	7	2.8
MAR. 05...	.04	12	E1000	35	.41	--	170	7	.2	7	3.1
APR. 07...	.05	11	26	--	.26	--	160	8	.2	6	3.2
MAY 14...	.04	5.8	510	140	.16	--	97	15	.1	6	3.8
JUNE 09...	.05	7.0	E1000	260	.21	95	130	5	.1	6	18
JULY 19...	.14	12	58	580	.23	--	120	6	.1	6	5.6
AUG. 29...	.08	9.3	140	32	.25	--	150	3	.2	7	2.8

JUNE 9, 1975
1200 HOURS

IDENTIFICATION OF PHYTOPLANKTON

3,600 CELLS/ML

_ORGANISM__NAME_	_COMMON__NAME_	CELLS/ML	PER_CENT
CHLOROPHYTA	GREEN ALGAE		
.CHLOROPHYCEAE			
..CHLOROCOCCALES			
...OOCYSTACEAE			
....ANKISTRODESMUS		52	1
...SCENEDESMACEAE			
....SCENEDESMUS		100	3
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..CENTRALES	CENTRIC		
...COSCINODISCACEAE			
D ....CYCLOTELLA		890	25
....MELOSIRA		1,400	40
..PENNALES	PENNATE		
...ACHNANTHACEAE			
....ACHNANTHES		100	3
....COCCONEIS		52	1
...DIATOMACEAE			
....DIATOMA		52	1
...FRAGILARIACEAE			
....ASTERIONELLA		420	12
...GOMPHONEMATACEAE			
....GOMPHONEMA		52	1
...NITZSCHIACEAE			
....NITZSCHIA		160	4
CYANOPHYTA	BLUE-GREEN ALGAE		
.MYXOPHYCEAE			
..CHROOCOCCALES	COCCOID		
...CHROOCOCCACEAE			
....ANACYSTIS		210	6
EUGLENOPHYTA	EUGLENOIDS		
.EUGLENOPHYCEAE			
..EUGLENALES			
...EUGLENACEAE			
....TRACHELOMONAS		52	1

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.688
CLASS 0.688
ORDER 1.426
FAMILY 1.915
GENERA 2.578

05267000 MISSISSIPPI RIVER NEAR ROYALTON, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	DIS-SOLVED ARSENIC (AS) (UG/L) (01000)	SUS-PENDED ARSENIC (AS) (UG/L) (01001)	TOTAL ARSENIC (AS) (UG/L) (01002)	DIS-SOLVED CAD-MIUM (CD) (UG/L) (01025)	SUS-PENDED CAD-MIUM (CD) (UG/L) (01026)	TOTAL CAD-MIUM (CD) (UG/L) (01027)	DIS-SOLVED CHRO-MIUM (CR) (UG/L) (01030)	SUS-PENDED CHRO-MIUM (CR) (UG/L) (01031)	TOTAL CHRO-MIUM (CR) (UG/L) (01034)	DIS-SOLVED COBALT (CO) (UG/L) (01035)	SUS-PENDED COBALT (CO) (UG/L) (01036)
JAN. 22...	1230	0	1	1	1	9	10	10	0	10	1	99
JUNE 06...	1200	0	0	0	1	<9	<10	0	0	0	0	<50
AUG. 29...	1345	2	0	2	2	<8	<10	10	0	10	0	<50

DATE	TOTAL COBALT (CO) (UG/L) (01037)	DIS-SOLVED COPPER (CU) (UG/L) (01040)	SUS-PENDED COPPER (CU) (UG/L) (01041)	TOTAL COPPER (CU) (UG/L) (01042)	DIS-SOLVED IRON (FE) (UG/L) (01046)	TOTAL IRON (FE) (UG/L) (01045)	DIS-SOLVED LEAD (PB) (UG/L) (01049)	SUS-PENDED LEAD (PB) (UG/L) (01050)	TOTAL LEAD (PB) (UG/L) (01051)	DIS-SOLVED MAN-GANESE (MN) (UG/L) (01056)	SUS-PENDED MAN-GANESE (MN) (UG/L) (01054)
JAN. 22...	100	2	8	10	60	810	5	94	100	20	30
JUNE 06...	<50	3	17	20	200	590	21	180	200	30	80
AUG. 29...	<50	4	<8	<10	40	260	17	83	100	20	50

JULY 19, 1975
1200 HOURS

IDENTIFICATION OF PHYTOPLANKTON

1,100 CELLS/ML

_ORGANISM__NAME_______________	_COMMON__NAME______	CELLS/ML	PER_CENT
CHLOROPHYTA	GREEN ALGAE		
.CHLOROPHYCEAE			
..CHLOROCOCCALES			
...OOCYSTACEAE			
....ANKISTRODESMUS		43	4
...SCENEDESMACEAE			
D ....SCENEDESMUS		600	54
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..CENTRALES	CENTRIC		
...COSCINODISCACEAE			
....CYCLOTELLA		86	8
D ....MELOSIRA		340	31
..PENNALES	PENNATE		
...ACHNANTHACEAE			
L ....COCCONEIS			0
...GOMPHONEMATACEAE			
....GOMPHONEMA		43	4
...NITZSCHIACEAE			
L ....NITZSCHIA			0
EUGLENOPHYTA	EUGLENOIDS		
.EUGLENOPHYCEAE			
..EUGLENALES			
...EUGLENACEAE			
L ....TRACHELOMONAS			0

NOTE: D - DOMINANT ORGANISM, GREATER OR EQUAL TO 15%
L - LESS THAN 1/2% MAY NOT HAVE BEEN ACTUALLY COUNTED
SAMPLING METHOD: PLASTIC SLIDES, RANDOM
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.983
CLASS 0.983
ORDER 1.169
FAMILY 1.373
GENERA 1.650

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05267000 MISSISSIPPI RIVER NEAR ROYALTON, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TOTAL MAN-GANESE (MN) (UG/L) (01055)	DIS-SOLVED MERCURY (HG) (UG/L) (71890)	SUS-PENDED MERCURY (HG) (UG/L) (71895)	TOTAL MERCURY (HG) (UG/L) (71900)	DIS-SOLVED SELE-NIUM (SE) (UG/L) (01145)	SUS-PENDED SELE-NIUM (SE) (UG/L) (01146)	TOTAL SELE-NIUM (SE) (UG/L) (01147)	DIS-SOLVED ZINC (ZN) (UG/L) (01090)	SUS-PENDED ZINC (ZN) (UG/L) (01091)	TOTAL ZINC (ZN) (UG/L) (01092)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)
JAN., 22...	50	.8	.0	.0	0	0	0	20	10	30	6.8
JUNE 09...	110	.1	.8	.9	0	0	0	0	30	30	12
AUG., 29...	70	1.2	.6	1.8	0	0	0	20	0	20	11

AUG. 29, 1975
1345 HOURS

IDENTIFICATION OF PHYTOPLANKTON

1.700 CELLS/ML

	_ORGANISM__NAME_____________	_COMMON__NAME______	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
L	....DICTYOSPHAERIUM			0
	...SCENEDESMACEAE			
D	....SCENEDESMUS		490	29
L	....TETRASTRUM			0
	..VOLVOCALES			
	...VOLVOCACEAE			
L	....PANDORINA			0
	..ZYGNEMATALES			
	...DESMIDIACEAE	PLACODERM DESMIDS		
L	....COSMARIUM			0
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
	....CYCLOTELLA		61	4
D	....MELOSIRA		980	57
	..PENNALES	PENNATE		
	...ACHNANTHACEAE			
	....COCCONEIS		120	7
	...GOMPHONEMATACEAE			
L	....GOMPHONEMA			0
	...NAVICULACEAE	NAVICULOID		
L	....NAVICULA			0
	...NITZSCHIACEAE			
L	....NITZSCHIA			0
	EUGLENOPHYTA	EUGLENOIDS		
	.EUGLENOPHYCEAE			
	..EUGLENALES			
	...EUGLENACEAE			
	....TRACHELOMONAS		61	4

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
L - LESS THEN 1%: MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER . 200-X MICROSCOPE
DIVERSITY INDICES. BASED ON ACTUAL COUNTS:
PHYL/DIV 1.068
CLASS 1.068
ORDER 1.397
FAMILY 1.397
GENERA 1.593

05279000 SOUTH FORK CROW RIVER NEAR MAYER, MINN.

LOCATION.--Lat 44°54'20", long 93°53'05", in SW¼SW¼ sec.30, T.117 N., R.25 W., Carver County, at gage, near center of span on downstream side of bridge on State Highway 7, 1.3 mi (2.1 km) north of Mayer, 4.3 mi (6.9 km) southwest of Watertown, and 16 mi (26 km) upstream from confluence with North Fork.

DRAINAGE AREA.--1,170 mi² (3,030 km²), approximately.

PERIOD OF RECORD.--Chemical analyses: October 1972 to current year.

REMARKS.--BOD and bacteria data furnished by Metropolitan Waste Control Commission, St. Paul, Minn. Miscellaneous samples of chemical data published for water years 1967, 1969, 1971, 1972

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPER- ATURE (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300)	DIS- SOLVED SOLIDS (TONS PER DAY) (70302)	SUS- PENDED SOLIDS (MG/L) (70299)	TUR- BID- ITY (JTU) (00070)	COLOR (PLAT- INUM- COBALT UNITS) (00080)	DIS- SOLVED OXYGEN (MG/L) (00300)
OCT.											
02...	1130	7.0	6.0	28	880	643	48.6	15	1	30	10.0
NOV.											
19...	1112	8.0	1.0	24	1275	803	52.9	2	4	20	13.2
DEC.											
18...	1130	-3.0	.0	8.4	1400	943	21.4	8	2	20	10.3
JAN.											
20...	1230	-12.0	.0	5.1	1305	866	11.9	133	5	100	1.0
21...	1100	-6.0	.0	9.5	1260	858	22.0	8	4	25	2.1
FEB.											
14...	1130	-5.0	.0	10	1410	849	22.9	1	5	70	.6
MAR.											
26...	1030	-5.0	.0	73	756	505	99.5	0	2	40	6.8
APR.											
18...	1130	5.6	.0	860	465	293	680	80	22	80	11.9
MAY											
12...	1100	17.0	16.5	1760	660	455	2160	56	13	50	9.3
JUNE											
20...	1130	28.0	21.5	604	850	599	977	68	18	39	6.9
JULY											
23...	0945	24.0	25.0	103	925	595	165	28	30	35	6.1
AUG.											
19...	0800	17.0	18.5	29	1020	651	51.0	40	17	65	7.9
SEP.											
26...	1300	21.5	14.5	17	1200	737	33.8	12	10	25	10.1
TIME WTD. AVG.	--	--	--	--	1030	677	--	35	--	--	7.4

DATE	CARBON DIOXIDE (CO2) (MG/L) (00405)	PH (UNITS) (00400)	DIS- SOLVED CAL- CIUM (CA) (MG/L) (00915)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L) (00925)	DIS- SOLVED SODIUM (NA) (MG/L) (00930)	DIS- SOLVED PO- TAS- SIUM (K) (MG/L) (00935)	ALKA- LINITY AS CACO3 (MG/L) (00410)	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940)	DIS- SOLVED SULFATE (SO4) (MG/L) (00945)	DIS- SOLVED FLUO- RIDE (F) (MG/L) (00950)	DIS- SOLVED AMMONIA NITRO- GEN (N) (MG/L) (00608)
OCT.											
02...	2.4	8.4	75	42	79	8.8	313	110	93	.6	.02
NOV.											
19...	3.3	8.3	91	46	120	9.8	337	160	130	.5	1.6
DEC.											
18...	6.7	8.1	110	51	150	14	433	200	130	.5	3.5
JAN.											
20...	13	7.8	110	53	120	10	419	160	130	.5	4.9
21...	24	7.5	120	50	98	9.5	393	120	160	.4	2.4
FEB.											
14...	20	7.6	110	52	110	9.4	415	150	140	.5	4.9
MAR.											
26...	7.2	7.8	72	35	40	7.5	232	60	94	.4	2.0
APR.											
18...	5.2	7.7	55	19	8.5	5.5	133	21	47	.2	.74
MAY											
12...	.5	8.8	80	33	14	5.2	175	23	130	.3	.02
JUNE											
20...	3.6	8.1	98	43	17	5.2	235	31	140	.4	.01
JULY											
23...	2.0	8.4	100	45	28	6.3	252	41	170	.4	.03
AUG.											
19...	1.4	8.6	100	46	57	7.0	280	82	160	.4	.00
SEP.											
26...	1.5	8.6	87	45	110	12	308	190	120	.4	.00
TIME WTD. AVG.	7.0	8.1	93	43	73	8.5	302	101	126	.4	1.5

05279000 SOUTH FORK CROW RIVER NEAR MAYER, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	AMMONIA NITROGEN (N) (MG/L) (00610)	TOTAL ORGANIC NITROGEN (N) (MG/L) (00605)	TOTAL KJELDAHL NITROGEN (N) (MG/L) (00625)	DISSOLVED NITRITE (N) (MG/L) (00613)	DISSOLVED NITRATE (N) (MG/L) (00618)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL NITROGEN (N) (MG/L) (00600)	DISSOLVED PHOSPHORUS (P) (MG/L) (00666)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L) (00310)	PHENOLS (UG/L) (32730)	FECAL COLIFORM (COL. PER 100 ML) (31616)
OCT.											
02...	.04	1.5	1.5	.00	.00	.01	1.5	.31	--	1	1500
NOV.											
19...	1.6	1.1	2.7	.03	.55	.59	3.3	2.1	2.8	1	80
DEC.											
18...	3.5	.40	3.9	.00	.76	.76	4.7	1.6	.9	4	1100
JAN.											
20...	4.9	.00	4.9	.07	.05	.12	5.0	1.5	4.2	2	1200
21...	2.4	1.6	4.0	.04	.89	.93	4.9	1.8	--	0	--
FEB.											
18...	4.9	.00	4.9	.00	.01	.02	4.9	1.6	4.0	9	1000
MAR.											
26...	2.1	1.1	3.2	.06	2.1	2.2	5.4	.78	4.2	2	670
APR.											
18...	.74	1.6	2.3	.07	7.4	7.4	10	.46	5.6	5	10000
MAY											
12...	.02	3.2	3.2	.05	3.1	3.1	6.3	.04	5.9	6	80
JUNE											
20...	.04	1.7	1.7	.09	8.5	8.6	11	.25	1.4	5	1000
JULY											
23...	.03	1.6	1.6	.02	1.7	2.1	3.7	.38	1.4	3	370
AUG.											
19...	.00	1.7	1.7	.01	.02	.03	1.7	.42	4.7	4	270
SEP.											
26...	.00	1.9	1.9	.00	.00	.01	1.9	.37	5.3	3	200
TIME WTD. AVG.	1.6	1.3	2.9	.03	1.9	2.0	4.9	.89	--	3	--

DATE	STREPTOCOCCI (COLONIES PER 100 ML) (31679)	DISSOLVED SOLIDS (TONS PER AC-FT) (70303)	PERCENT SATURATION (00301)	HARDNESS (CA,MG) (MG/L) (00900)	NONCARBONATE HARDNESS (MG/L) (00902)	SODIUM ADSORPTION RATIO (00931)	PERCENT SODIUM (00932)	DIS SOLVED AMMONIA (NH4) (MG/L) (71846)	DIS SOLVED NITRATE (NO3) (MG/L) (71851)	DIS SOLVED NITRITE (NO2) (MG/L) (71856)	TOTAL NITROGEN (NO3) (MG/L) (71887)
OCT.											
02...	820	.87	85	360	47	1.6	32	.05	.00	.00	6.7
NOV.											
19...	720	1.04	96	420	80	2.6	38	2.1	2.4	.10	15
DEC.											
18...	0	1.28	72	480	52	3.0	39	4.5	3.4	.00	21
JAN.											
20...	490	1.18	7	490	78	2.4	34	6.3	.22	.23	22
21...	--	1.17	15	510	110	1.9	29	3.1	3.9	.13	22
FEB.											
18...	280	1.15	4	490	74	2.2	32	6.3	.04	.00	22
MAR.											
26...	240	.89	48	320	92	1.3	21	2.6	9.5	.20	24
APR.											
18...	4500	.80	83	220	83	.3	8	.95	33	.26	45
MAY											
12...	12	.82	98	340	160	.3	8	.03	14	.16	28
JUNE											
20...	212	.81	80	420	190	.4	8	.01	38	.30	48
JULY											
23...	164	.81	74	440	180	.6	12	.04	7.4	.07	16
AUG.											
19...	160	.89	87	440	160	1.2	22	.00	.09	.03	7.7
SEP.											
26...	112	1.00	103	400	96	2.6	36	.00	.00	.00	8.5
TIME WTD. AVG.	--	.92	65	410	107	1.5	25	2.0	8.6	.11	22

05280000 CROW RIVER AT ROCKFORD, MINN.

LOCATION.--Lat 45°05'12", long 93°44'02", in sec.29, T.119 N., R.24 W., Hennepin County, 1,000 ft (305 m) downstream from gaging station at Rockford, 150 ft (46 m) downstream from bridge on State Highway 55 and 1 mi (1.6 km) downstream from confluence of North and South Forks.

DRAINAGE AREA.--2,520 mi² (6,530 km²), approximately.

PERIOD OF RECORD.--Chemical analyses: October 1972 to current year.

REMARKS.--BOD and bacteria data furnished by Metropolitan Waste Control Commission, St. Paul, Minn. Miscellaneous samples of chemical data published for water years 1964, 1967 and 1969-72.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPERATURE (DEG C) (00020)	TEMPERATURE (DEG C) (00010)	INSTANTANEOUS DISCHARGE (CFS) (00061)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L) (70300)	DISSOLVED SOLIDS (TONS PER DAY) (70302)	SUSPENDED SOLIDS (MG/L) (70299)	TURBIDITY (JTU) (00070)	COLOR (PLATINUM-COBALT UNITS) (00080)	DISSOLVED OXYGEN (MG/L) (00300)
OCT.											
09...	1100	12.5	9.5	94	790	503	128	35	10	20	9.2
NOV.											
19...	1322	7.0	2.0	111	720	461	138	4	4	5	12.7
DEC.											
17...	1100	-6.0	.0	70	775	524	99.0	0	3	5	12.8
JAN.											
14...	1330	-15.0	.0	40	727	449	48.5	0	3	10	4.0
FEB.											
11...	1030	-17.0	.0	65	795	421	73.9	0	2	30	3.5
MAR.											
13...	1233	-13.0	.0	81	720	462	101	3	2	20	5.6
APR.											
16...	1130	9.0	.0	977	505	301	794	56	10	25	11.8
MAY											
12...	1300	16.0	17.0	4710	500	332	4220	52	2	50	9.8
JUNE											
20...	0930	26.5	21.5	1500	635	404	1640	40	21	40	6.6
JULY											
23...	1230	28.0	26.0	556	560	339	509	72	31	30	6.0
AUG.											
19...	0930	19.0	19.0	141	620	397	151	48	23	65	8.1
SEP.											
26...	1100	14.5	12.0	143	600	360	139	8	7	6	10.5
TIME WTD. AVG.	--	--	--	--	663	413	--	27	--	--	8.4

DATE	CARBON DIOXIDE (CO2) (MG/L) (00405)	PH (UNITS) (00400)	DISSOLVED CALCIUM (CA) (MG/L) (00915)	DISSOLVED MAGNESIUM (MG) (MG/L) (00925)	DISSOLVED SODIUM (NA) (MG/L) (00930)	DISSOLVED POTASSIUM (K) (MG/L) (00935)	ALKALINITY AS CACO3 (MG/L) (00410)	DISSOLVED CHLORIDE (CL) (MG/L) (00940)	DISSOLVED SULFATE (SO4) (MG/L) (00945)	DISSOLVED FLUORIDE (F) (MG/L) (00950)	DISSOLVED AMMONIA NITROGEN (N) (MG/L) (00608)
OCT.											
09...	5.2	8.1	83	38	47	7.2	335	55	58	.4	.05
NOV.											
19...	3.9	8.2	85	34	32	5.1	318	34	46	.3	.21
DEC.											
17...	8.8	7.9	93	37	45	6.4	360	53	49	.3	.55
JAN.											
14...	10	7.8	86	34	28	4.9	330	31	44	.2	.96
FEB.											
11...	24	7.4	83	35	22	4.7	315	23	42	.2	.93
MAR.											
13...	13	7.7	78	36	30	4.5	324	31	48	.2	.95
APR.											
16...	5.2	7.8	56	23	13	5.3	168	23	42	.2	.61
MAY											
12...	.7	8.7	61	25	8.8	4.6	177	15	71	.2	.02
JUNE											
20...	3.4	8.1	74	33	12	4.9	218	19	78	.2	.01
JULY											
23...	1.6	8.4	61	28	12	5.0	211	18	50	.3	.07
AUG.											
19...	1.6	8.5	67	35	18	5.1	261	21	57	.2	.00
SEP.											
26...	2.0	8.4	65	30	20	4.9	253	22	46	.2	.00
TIME WTD. AVG.	6.6	8.1	74	32	24	5.2	273	29	53	.2	.36

05280000 CROW RIVER AT ROCKFORD, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	AMMONIA NITRO-GEN (N) (MG/L) (00610)	TOTAL ORGANIC NITRO-GEN (N) (MG/L) (00605)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L) (00625)	DIS-SOLVED NITRITE (N) (MG/L) (00613)	DIS-SOLVED NITRATE (N) (MG/L) (00618)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL NITRO-GEN (N) (MG/L) (00600)	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)	BIO-CHEM-ICAL OXYGEN DEMAND 5 DAY (MG/L) (00310)	PHENOLS (UG/L) (32730)	FECAL COLI-FORM (COL. PER 100 ML) (31616)
OCT. 09...	.16	1.1	1.3	.00	.00	.00	1.3	.16	4.8	1	20
NOV. 19...	.21	.50	.71	.01	.47	.48	1.2	.35	.6	0	80
DEC. 17...	.58	.33	.91	.01	.76	.78	1.7	.31	--	1	0
JAN. 14...	.96	.14	1.1	.02	.41	.43	1.5	.22	1.1	1	0
FEB. 11...	.96	.44	1.4	.00	.48	.51	1.9	.16	.6	5	40
MAR. 13...	.96	.44	1.4	.01	.54	.60	2.0	.28	1.4	3	10
APR. 16...	.65	1.4	2.0	.06	3.6	3.7	5.7	.35	6.9	5	280
MAY 12...	.02	1.8	1.8	.01	.99	1.0	2.8	.03	5.2	--	10
JUNE 20...	.04	1.6	1.6	.04	3.7	3.8	5.4	.21	3.7	4	440
JULY 23...	.07	1.7	1.8	.03	.46	.60	2.4	.25	2.0	5	60
AUG. 19...	.00	1.4	1.4	.01	.00	.01	1.4	.13	5.6	3	80
SEP. 26...	.00	.99	.99	.01	.07	.08	1.1	.14	2.6	7	130
TIME WTD. AVG.	.38	.99	1.4	.02	.96	.00	2.4	.22	3.1	3	--

DATE	STREP-TOCOCCI (COL-ONIES PER 100 ML) (31679)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	PER-CENT SATUR-ATION (00301)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	PERCENT SODIUM (00932)	DIS SOLVED AMMONIA (NH4) (MG/L) (71846)	DIS SOLVED NITRATE (NO3) (MG/L) (71851)	DIS SOLVED NITRITE (NO2) (MG/L) (71856)	TOTAL NITRO-GEN (NO3) (MG/L) (71887)
OCT. 09...	68	.68	81	360	29	1.1	22	.06	.00	.00	5.8
NOV. 19...	56	.63	95	350	34	.7	16	.27	2.1	.03	5.3
DEC. 17...	4	.71	90	380	24	1.0	20	.71	3.4	.03	7.5
JAN. 14...	12	.61	28	350	25	.6	14	1.2	1.8	.07	6.8
FEB. 11...	20	.57	24	350	36	.5	12	1.2	2.1	.00	8.5
MAR. 13...	8	.63	39	340	19	.7	16	1.2	2.4	.03	6.9
APR. 16...	80	.41	82	230	66	.4	11	.79	16	.20	25
MAY 12...	4	.45	103	260	79	.2	7	.03	4.4	.03	12
JUNE 20...	200	.55	77	320	100	.3	7	.01	16	.13	24
JULY 23...	88	.46	75	270	57	.3	4	.09	2.0	.10	11
AUG. 19...	108	.54	89	310	51	.4	11	.00	.00	.03	6.2
SEP. 26...	60	.49	100	290	33	.5	13	.00	.31	.03	4.7
TIME WTD. AVG.	--	.56	74	318	46	.6	13	.46	4.2	.06	10

05280000 CROW RIVER AT ROCKFORD, MINN.--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	4280			312	---	---	298	---	---
2	3890			306	---	---	279	93	70
3	3590			282	---	---	266	86	62
4	3320			276	---	---	235	75	48
5	3040			263	---	---	223	---	---
6	2700			257	---	---	215	---	---
7	2410			235	---	---	206	---	---
8	2140			226	---	---	197	---	---
9	1930			209	---	---	192	---	---
10	1750			195	---	---	192	---	---
11	1600			178	---	---	189	---	---
12	1480			167	---	---	183	---	---
13	1340			153	---	---	170	---	---
14	1220			146	---	---	181	---	---
15	1110			143	---	---	181	---	---
16	1040			138	---	---	167	---	---
17	973			138	---	---	156	---	---
18	889			134	---	---	167	---	---
19	826			134	---	---	162	---	---
20	757			153	---	---	156	---	---
21	692			156	---	---	162	---	---
22	634			159	---	---	164	---	---
23	580			164	---	---	159	---	---
24	550			162	---	---	153	---	---
25	520			151	---	---	146	---	---
26	487			138	70	26	138	---	---
27	455			134	---	---	131	---	---
28	425			146	---	---	126	---	---
29	384			167	---	---	122	---	---
30	354			241	---	---	120	---	---
31	339			312	---	---	---	---	---

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	DIS-SOLVED ALUM-INUM (AL) (UG/L) (01106)	SUS-PENDED ALUM-INUM (AL) (UG/L) (01107)	TOTAL ALUM-INUM (AL) (UG/L) (01105)	TOTAL ARSENIC (AS) (UG/L) (01002)	TOTAL BARIUM (BA) (UG/L) (01007)	TOTAL BERYL-LIUM (BE) (UG/L) (01012)	DIS-SOLVED BORON (B) (UG/L) (01020)	TOTAL BORON (B) (UG/L) (01022)	TOTAL CAD-MIUM (CD) (UG/L) (01027)	TOTAL CHRO-MIUM (CR) (UG/L) (01034)	TOTAL COBALT (CO) (UG/L) (01037)
OCT. 09...	1100	40	360	400	4	200	<10	150	150	<10	0	<50
SEP. 26...	1100	10	230	240	6	<100	<10	50	120	<10	10	<50

DATE	DIS-SOLVED COPPER (CU) (UG/L) (01040)	SUS-PENDED COPPER (CU) (UG/L) (01041)	TOTAL COPPER (CU) (UG/L) (01042)	CYANIDE (CN) (MG/L) (00720)	DIS-SOLVED IRON (FE) (UG/L) (01046)	TOTAL IRON (FE) (UG/L) (01045)	TOTAL LEAD (PB) (UG/L) (01051)	TOTAL LITHIUM (LI) (UG/L) (01132)	DIS-SOLVED MAN-GANESE (MN) (UG/L) (01056)	SUS-PENDED MAN-GANESE (MN) (UG/L) (01054)	TOTAL MAN-GANESE (MN) (UG/L) (01055)	TOTAL MERCURY (HG) (UG/L) (71900)
OCT. 09...	5	<7	<10	.00	30	900	<100	10	120	340	460	.0
SEP. 26...	1	<4	<10	.00	0	420	<100	10	30	120	150	.2

DATE	TOTAL MOLYB-DENUM (MO) (UG/L) (01062)	TOTAL NICKEL (NI) (UG/L) (01067)	OIL AND GREASE (MG/L) (00550)	TOTAL SILVER (AG) (UG/L) (01077)	TOTAL SELE-NIUM (SE) (UG/L) (01147)	DIS-SOLVED STRON-TIUM (SR) (UG/L) (01080)	SUS-PENDED STRON-TIUM (SR) (UG/L) (01081)	TOTAL STRON-TIUM (SR) (UG/L) (01082)	DIS-SOLVED ZINC (ZN) (UG/L) (01090)	SUS-PENDED ZINC (ZN) (UG/L) (01091)	TOTAL ZINC (ZN) (UG/L) (01092)
OCT. 09...	4	<50	14	<10	0	300	60	360	20	0	20
SEP. 26...	5	<50	2	<10	0	210	0	210	10	0	10

05283500 MISSISSIPPI RIVER AT ANOKA, MINN.

LOCATION.--Lat 45°11'30", long 93°23'40", in SE¼NW¼ sec.19, T.120 N., R.22 W., Anoka County, at bridge on U.S. Highways 52 and 169 at Anoka, 0.3 mi (0.5 km) upstream from Rum River, and at mile 871.3 (1,402 km) upstream from Ohio River.

DRAINAGE AREA.--17,100 sq mi, approximately.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPER-ATURE (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	INSTAN-TANEOUS DIS-CHARGE (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	SUS-PENDED SOLIDS (MG/L) (70299)	TUR-BID-ITY (JTU) (00070)	COLOR (PLAT-INUM-COBALT UNITS) (00080)	DIS-SOLVED OXYGEN (MG/L) (00300)
OCT.											
09...	1015	--	12.0	2270	347	198	1210	21	2	20	9.2
NOV.											
13...	1130	--	4.0	6620	290	182	3250	7	10	20	11.2
DEC.											
04...	1100	--	1.0	2200	310	204	1210	2	3	20	11.6
JAN.											
08...	1140	--	.5	5680	350	217	3330	0	2	20	12.0
14...	1030	12.0	.0	4870	370	232	3050	3	4	15	12.2
FEB.											
05...	1145	--	.0	4880	420	163	2150	14	2	10	10.8
MAR.											
05...	0905	--	1.5	4760	360	205	2630	7	4	30	12.2
APR.											
09...	0900	--	1.0	6900	320	214	3990	16	6	20	12.4
MAY											
07...	0815	--	11.0	39000	290	186	19600	52	18	45	10.0
JUNE											
04...	0825	--	20.5	15470	310	202	8440	20	14	45	8.3
JULY											
02...	0815	--	26.0	23300	320	233	14700	76	24	45	6.8
AUG.											
06...	0805	--	22.0	6730	300	856	15600	24	14	45	7.5
SEP.											
03...	0825	--	19.0	6400	330	195	3370	28	16	20	7.4
TIME WTD. AVG.	--	--	--	--	332	253	--	21	--	--	10.1

DATE	TIME	DIS-SOLVED ALUM-INUM (AL) (UG/L) (01106)	SUS-PENDED ALUM-INUM (AL) (UG/L) (01107)	TOTAL ALUM-INUM (AL) (UG/L) (01105)	TOTAL ARSENIC (AS) (UG/L) (01002)	TOTAL BARIUM (BA) (UG/L) (01007)	TOTAL BERYL-LIUM (BE) (UG/L) (01012)	DIS-SOLVED BORON (B) (UG/L) (01020)	TOTAL BORON (B) (UG/L) (01022)	TOTAL CAD-MIUM (CD) (UG/L) (01027)	TOTAL CHRO-MIUM (CR) (UG/L) (01034)	TOTAL COBALT (CO) (UG/L) (01037)
OCT.												
09...	1015	0	<100	<100	1	<100	<10	60	70	<10	0	<50

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05283500 MISSISSIPPI RIVER AT ANOKA, MINN.--Continued

PERIOD OF RECORD.--Chemical analyses: January 1973 to current year.

REMARKS.--BOD and bacteria data furnished by Metropolitan Waste Control Commission, St. Paul, Minn. Discharge computed using records for Rum River near St. Francis, Mississippi River near Anoka and occasional measurements made on the Mississippi River at Anoka and Rum river at Anoka. Miscellaneous analyses are published for water year 1972.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	CARBON DIOXIDE (CO2) (MG/L) (00405)	PH (UNITS) (00400)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	ALKA-LINITY AS CACO3 (MG/L) (00410)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	DIS-SOLVED AMMONIA NITRO-GEN (N) (MG/L) (00608)
OCT. 09...	.7	8.7	48	18	6.8	2.0	176	6.1	14	.1	.04
NOV. 13...	2.7	8.0	37	11	5.5	2.0	137	4.9	10	.1	.04
DEC. 04...	6.0	7.7	43	14	7.2	2.2	154	6.5	11	.1	.05
JAN. 08...	3.3	8.0	47	15	7.4	2.1	170	6.4	10	.1	.10
14...	2.8	8.1	50	17	8.1	2.6	181	5.8	14	.2	.13
FEB. 05...	7.1	7.7	48	16	7.1	2.4	183	6.5	14	.1	.24
MAR. 05...	5.2	7.8	44	17	6.0	1.9	168	4.3	8.9	.1	.16
APR. 09...	20	7.2	46	15	6.5	3.2	162	6.0	10	.1	.15
MAY 07...	11	7.3	41	12	4.1	3.2	107	6.8	26	.1	.09
JUNE 04...	2.1	8.1	42	15	5.2	2.6	138	5.8	18	.1	.02
JULY 02...	2.3	8.1	44	16	4.9	3.0	148	6.1	22	.2	.15
AUG. 06...	4.3	7.8	39	14	5.6	2.1	140	5.9	12	.1	.00
SEP. 03...	4.7	7.8	40	15	5.9	2.1	153	5.6	11	.1	.00
TIME WTD. AVG.	5.6	7.9	44	15	6.2	2.4	155	5.9	14	.1	.09

DATE	DIS-SOLVED COPPER (CU) (UG/L) (01040)	SUS-PENDED COPPER (CU) (UG/L) (01041)	TOTAL COPPER (CU) (UG/L) (01042)	CYANIDE (CN) (MG/L) (00720)	DIS-SOLVED IRON (FE) (UG/L) (01046)	TOTAL IRON (FE) (UG/L) (01045)	TOTAL LEAD (PB) (UG/L) (01051)	TOTAL LITHIUM (LI) (UG/L) (01132)	DIS-SOLVED MAN-GANESE (MN) (UG/L) (01056)	SUS-PENDED MAN-GANESE (MN) (UG/L) (01054)	TOTAL MAN-GANESE (MN) (UG/L) (01055)	TOTAL MERCURY (HG) (UG/L) (71900)
OCT. 09...	6	<4	<10	.00	100	150	<100	0	10	90	100	2.0

05283500 MISSISSIPPI RIVER AT ANOKA, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	AMMONIA NITRO- GEN (N) (MG/L) (00610)	TOTAL. ORGANIC NITRO- GEN (N) (MG/L) (00605)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625)	DIS- SOLVED NITRITE (N) (MG/L) (00613)	DIS- SOLVED NITRATE (N) (MG/L) (00618)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL NITRO- GEN (N) (MG/L) (00600)	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L) (00666)	BIO- CHEM- ICAL OXYGEN DEMAND 5 DAY (MG/L) (00310)	PHENOLS (UG/L) (32730)	FECAL COLI- FORM (COL. PER 100 ML) (31616)
OCT.											
09...	.26	.94	1.2	--	--	.07	1.3	.05	2.3	1	20
NOV.											
13...	.08	.75	.83	.00	.23	.23	1.1	.04	2.3	0	90
DEC.											
04...	.10	.67	.77	.00	.28	.30	1.1	.03	1.0	0	60
JAN.											
08...	.15	.95	1.1	.01	.32	.33	1.4	.04	1.4	0	10
14...	.16	1.1	1.3	.01	.35	.40	1.7	.03	--	4	--
FEB.											
05...	.25	.50	.75	.01	.36	.36	1.1	.09	.9	3	20
MAR.											
05...	.16	.50	.66	.00	.37	.40	1.1	.05	1.3	1	60
APR.											
09...	.25	.75	1.0	.01	.39	.41	1.4	.05	1.4	11	100
MAY											
07...	.19	1.3	1.5	.01	1.0	1.0	2.5	.08	2.3	9	1700
JUNE											
04...	.08	4.7	4.8	.00	.32	.32	5.1	.04	2.3	8	160
JULY											
02...	.22	1.2	1.4	.05	.85	.90	2.3	.11	3.1	4	1070
AUG.											
06...	.04	1.3	1.3	.00	.15	.16	1.5	.10	1.8	7	10
SEP.											
03...	.00	.67	.67	.01	.11	.12	.79	.04	1.8	2	100
TIME WTD. AVG.	.15	1.2	1.3	.01	.42	.39	1.7	.06	1.8	4	--

DATE	TOTAL MOLYB- DENUM (MO) (UG/L) (01062)	TOTAL NICKEL (NI) (UG/L) (01067)	OIL AND GREASE (MG/L) (00550)	TOTAL SILVER (AG) (UG/L) (01077)	TOTAL SELE- NIUM (SE) (UG/L) (01147)	DIS- SOLVED STRON- TIUM (SR) (UG/L) (01080)	SUS- PENDED STRON- TIUM (SR) (UG/L) (01081)	TOTAL STRON- TIUM (SR) (UG/L) (01082)	DIS- SOLVED ZINC (ZN) (UG/L) (01090)	SUS- PENDED ZINC (ZN) (UG/L) (01091)	TOTAL ZINC (ZN) (UG/L) (01092)
OCT.											
09...	1	<50	9	<10	0	100	10	110	10	130	140

05283500 MISSISSIPPI RIVER AT ANOKA, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	STREP- TOCOCCI (COL- ONIES PER 100 ML) (31679)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303)	PER- CENT SATUR- ATION (00301)	HARD- NESS (CA,MG) (MG/L) (00900)	NON- CAR- BONATE HARD- NESS (MG/L) (00902)	SODIUM AD- SORP- TION RATIO (00931)	PERCENT SODIUM (00932)	DIS SOLVED AMMONIA (NH4) (MG/L) (71846)	DIS SOLVED NITRATE (NO3) (MG/L) (71851)	DIS SOLVED NITRITE (NO2) (MG/L) (71856)	TOTAL NITRO- GEN (NO3) (MG/L) (71887)
OCT.											
09...	16	.27	87	190	18	.2	7	.05	--	--	5.6
NOV.											
13...	130	.25	87	140	1	.2	8	.05	1.1	.00	6.7
DEC.											
04...	12	.28	84	170	11	.2	9	.06	1.2	.00	4.7
JAN.											
08...	4	.30	96	180	9	.2	8	.13	1.5	.03	6.3
13...	--	.32	86	190	14	.3	8	.17	1.7	.03	7.5
FEB.											
05...	8	.22	86	190	3	.2	8	.31	1.6	.03	4.9
MAR.											
05...	0	.28	90	180	12	.2	7	.21	1.6	.00	4.7
APR.											
09...	76	.29	90	180	14	.2	7	.19	1.7	.03	6.2
MAY											
07...	64	.25	92	150	44	.1	5	.12	4.4	.03	11
JUNE											
04...	40	.27	95	170	29	.2	6	.03	1.4	.00	23
JULY											
02...	--	.32	85	180	27	.2	6	.19	3.8	.16	10
AUG.											
06...	12	1.16	87	160	15	.2	7	.00	.66	.03	6.5
SEP.											
03...	60	.27	81	160	9	.2	7	.00	.49	.03	3.5
TIME WTD. AVG.	--	.35	88	172	16	.2	7	.12	1.8	.03	7.6

DATE	TIME	DIS- SOLVED GROSS ALPHA AS U-NAT. (UG/L) (80030)	SUS- PENDED GROSS ALPHA AS U-NAT. (UG/L) (80040)	DIS- SOLVED GROSS BETA AS CS-137 (PC/L) (03515)	SUS- PENDED GROSS BETA AS CS-137 (PC/L) (03516)	DIS- SOLVED GROSS BETA AS SR90 /Y90 (PC/L) (80050)	SUS- PENDED GROSS BETA AS SR90 /Y90 (PC/L) (80060)	DIS- SOLVED RA-226 (RADON METHOD) (PC/L) (09511)	DIS- SOLVED NATURAL URANIUM (U) (UG/L) (22703)	TOTAL FILT- RABLE RESIDUE (MG/L) (00515)	TOTAL NON- FILT- RABLE RESIDUE (MG/L) (00530)
OCT.											
09...	1015	2.3	4.3	5.0	3.2	4.0	2.0	.05	.4	210	4

05286000 RUM RIVER NEAR ST. FRANCIS, MINN.

LOCATION.--Lat 45°19'40", long 93°22'20", in SE¼ sec.19, T.33 N., R.24 W., Anoka County, at gaging station on left bank at upstream side of highway bridge, 4 mi (6 km) south of St. Francis and 15.8 mi (25.4 km) upstream from mouth.

DRAINAGE AREA.--1,360 mi² (3,520 km²), approximately.

PERIOD OF RECORD.--Chemical analyses: October 1972 to current year.

REMARKS.--BOD and bacteria data furnished by Metropolitan Waste Control Commission, St. Paul, Minn. Miscellaneous samples of chemical data published for water years 1964, 1967-72.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPER-ATURE (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	INSTAN-TANEOUS DIS-CHARGE (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	SUS-PENDED SOLIDS (MG/L) (70299)	TUR-BID-ITY (JTU) (00070)	COLOR (PLAT-INUM-COBALT UNITS) (00080)	DIS-SOLVED OXYGEN (MG/L) (00300)
OCT.											
07...	1030	3.5	7.0	299	275	166	134	0	1	10	10.4
NOV.											
15...	0939	.5	1.0	372	280	178	179	13	3	20	12.9
DEC.											
23...	1100	-8.0	.0	259	350	206	144	4	2	20	11.8
JAN.											
22...	1115	-16.0	.0	256	325	214	148	4	3	5	3.5
FEB.											
18...	1130	.0	.0	297	315	185	148	2	2	20	3.9
MAR.											
18...	1100	3.0	.0	313	330	195	165	8	3	10	5.9
APR.											
21...	1200	7.0	3.0	3420	140	108	997	72	21	65	11.0
MAY											
13...	1000	20.0	15.5	2360	210	142	905	60	4	70	8.7
JUNE											
18...	1315	18.0	18.0	1320	230	157	560	40	14	60	10.0
JULY											
16...	1200	31.0	23.0	1350	257	181	660	28	5	65	6.4
AUG.											
20...	0930	14.5	18.0	506	254	142	194	32	11	30	8.2
SEP.											
22...	1100	15.5	12.0	631	281	157	267	16	2	24	10.2
TIME WTD. AVG.	--	--	--	--	271	169	--	23	--	--	8.6

DATE	TIME	DIS-SOLVED ALUM-INUM (AL) (UG/L) (01106)	SUS-PENDED ALUM-INUM (AL) (UG/L) (01107)	TOTAL ALUM-INUM (AL) (UG/L) (01105)	TOTAL ARSENIC (AS) (UG/L) (01002)	TOTAL BARIUM (BA) (UG/L) (01007)	TOTAL BERYL-LIUM (BE) (UG/L) (01012)	DIS-SOLVED BORON (B) (UG/L) (01020)	TOTAL BORON (B) (UG/L) (01022)	TOTAL CAD-MIUM (CD) (UG/L) (01027)	TOTAL CHRO-MIUM (CR) (UG/L) (01034)	TOTAL COBALT (CO) (UG/L) (01037)
OCT.												
07...	1030	10	390	400	1	0	<10	0	120	<10	0	<50
SEP.												
22...	1100	0	180	180	0	--	--	50	90	<10	--	--

05286000 RUM RIVER NEAR ST. FRANCIS, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	CARBON DIOXIDE (CO2) (MG/L) (00405)	PH (UNITS) (00400)	DISSOLVED CALCIUM (CA) (MG/L) (00915)	DISSOLVED MAGNESIUM (MG) (MG/L) (00925)	DISSOLVED SODIUM (NA) (MG/L) (00930)	DISSOLVED POTASSIUM (K) (MG/L) (00935)	ALKALINITY AS CACO3 (MG/L) (00410)	DISSOLVED CHLORIDE (CL) (MG/L) (00940)	DISSOLVED SULFATE (SO4) (MG/L) (00945)	DISSOLVED FLUORIDE (F) (MG/L) (00950)	DISSOLVED AMMONIA NITROGEN (N) (MG/L) (00608)
OCT. 07...	1.7	8.2	38	13	5.2	2.1	139	4.4	8.9	.2	.02
NOV. 15...	4.2	7.8	38	11	4.7	1.7	137	4.8	10	.1	.07
DEC. 23...	3.8	7.9	45	13	5.5	1.9	155	5.0	9.6	.1	.17
JAN. 22...	6.5	7.7	46	14	5.8	2.5	166	5.1	8.9	.1	.30
FEB. 18...	15	7.3	40	14	5.0	3.5	153	4.3	9.1	.1	.21
MAR. 18...	9.4	7.5	41	14	5.2	2.6	153	7.0	9.6	.3	.12
APR. 21...	2.0	7.7	17	5.7	1.8	2.9	53	3.5	8.4	.1	.23
MAY 13...	2.2	7.9	27	7.1	3.8	2.3	90	4.3	9.1	.2	.00
JUNE 18...	1.4	8.2	32	10	3.8	1.3	112	4.0	5.4	.1	.01
JULY 16...	2.4	8.0	34	11	3.3	1.5	123	4.0	6.9	.1	.00
AUG. 20...	1.1	8.3	31	11	4.9	1.6	112	5.3	6.9	.1	.00
SEP. 22...	1.9	8.1	35	11	5.0	1.8	122	4.0	7.1	.2	.00
TIME WTD. AVG.	4.3	7.9	35	11	4.5	2.1	126	4.6	8.3	.1	.09

DATE	DISSOLVED COPPER (CU) (UG/L) (01040)	SUSPENDED COPPER (CU) (UG/L) (01041)	TOTAL COPPER (CU) (UG/L) (01042)	CYANIDE (CN) (MG/L) (00720)	DISSOLVED IRON (FE) (UG/L) (01046)	TOTAL IRON (FE) (UG/L) (01045)	TOTAL LEAD (PB) (UG/L) (01051)	TOTAL LITHIUM (LI) (UG/L) (01132)	DISSOLVED MANGANESE (MN) (UG/L) (01056)	SUSPENDED MANGANESE (MN) (UG/L) (01054)	TOTAL MANGANESE (MN) (UG/L) (01055)	TOTAL MERCURY (HG) (UG/L) (71900)
OCT. 07...	1	<9	<10	.00	130	260	<100	0	100	20	120	.0
SEP. 22...	1	<9	<10	.00	140	590	<100	0	20	70	90	.0

DATE	TOTAL MOLYBDENUM (MO) (UG/L) (01062)	TOTAL NICKEL (NI) (UG/L) (01067)	OIL AND GREASE (MG/L) (00550)	TOTAL SILVER (AG) (UG/L) (01077)	TOTAL SELENIUM (SE) (UG/L) (01147)	DISSOLVED STRONTIUM (SR) (UG/L) (01080)	SUSPENDED STRONTIUM (SR) (UG/L) (01081)	TOTAL STRONTIUM (SR) (UG/L) (01082)	DISSOLVED ZINC (ZN) (UG/L) (01090)	SUSPENDED ZINC (ZN) (UG/L) (01091)	TOTAL ZINC (ZN) (UG/L) (01092)
OCT. 07...	1	50	0	<10	0	80	0	80	10	0	10
SEP. 22...	1	<50	1	10	0	100	0	100	0	20	20

05286000 RUM RIVER NEAR ST. FRANCIS, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	AMMONIA NITRO- GEN (N) (MG/L) (00610)	TOTAL ORGANIC NITRO- GEN (N) (MG/L) (00605)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625)	DIS- SOLVED NITRITE (N) (MG/L) (00613)	DIS- SOLVED NITRATE (N) (MG/L) (00618)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL NITRO- GEN (N) (MG/L) (00600)	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L) (00666)	BIO- CHEM- ICAL OXYGEN DEMAND 5 DAY (MG/L) (00310)	PHENOLS (UG/L) (32730)	FECAL COLI- FORM (COL, PER 100 ML) (31616)
OCT, 07...	.12	.61	.73	.01	.17	.21	.94	.08	6.5	1	10
NOV, 15...	.13	.41	.54	.00	.28	.28	.82	.09	1.0	1	12
DEC, 23...	.17	.36	.53	.01	.37	.39	.92	.03	.4	2	10
JAN, 22...	.34	.51	.85	.01	.40	.41	1.3	.07	1.1	1	30
FEB, 18...	.21	.52	.73	.01	.36	.49	1.2	.28	1.3	5	0
MAR, 18...	.13	.42	.55	.00	.44	.46	1.0	.02	.6	4	20
APR, 21...	.23	1.2	1.4	.00	.97	.98	2.4	.06	3.5	7	20
MAY 13...	.01	.99	1.0	.00	.03	.03	1.0	.03	2.7	10	4
JUNE 18...	.01	1.2	1.2	.00	.06	.08	1.3	.03	2.1	6	230
JULY 16...	.00	1.4	1.4	.02	.12	.17	1.6	.14	3.0	8	0
AUG, 20...	.00	.81	.81	.01	.11	.14	.95	.12	3.0	2	250
SEP, 22...	.00	1.1	1.1	.01	.14	.16	1.3	.02	6.6	4	40
TIME WTD, AVG,	.11	.79	.90	.01	.29	.32	1.2	.08	2.7	4	--

DATE	STREP- TOCOCCI (COL- ONIES PER 100 ML) (31679)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303)	PER- CENT SATUR- ATION (00301)	HARD- NESS (CA,MG) (MG/L) (00900)	NON- CAR- BONATE HARD- NESS (MG/L) (00902)	SODIUM AD- SORP- TION RATIO (00931)	PERCENT SODIUM (00932)	DIS SOLVED AMMONIA (NH4) (MG/L) (71846)	DIS SOLVED NITRATE (NO3) (MG/L) (71851)	DIS SOLVED NITRITE (NO2) (MG/L) (71856)	TOTAL NITRO- GEN (NO3) (MG/L) (71887)
OCT, 07...	28	.23	88	150	10	.2	7	.03	.75	.03	4.2
NOV, 15...	20	.24	93	140	3	.2	7	.09	1.2	.00	3.6
DEC, 23...	32	.28	83	170	11	.2	7	.22	1.6	.03	4.1
JAN, 22...	20	.29	25	170	7	.2	7	.39	1.9	.03	5.8
FEB, 18...	0	.25	27	160	5	.2	6	.27	1.6	.03	5.4
MAR, 18...	0	.27	42	160	7	.2	6	.15	1.9	.00	4.5
APR, 21...	40	.15	84	66	13	.1	5	.30	4.3	.03	11
MAY 13...	16	.19	89	97	6	.2	8	.00	.13	.00	4.6
JUNE 18...	76	.21	108	120	10	.2	6	.01	.27	.00	5.7
JULY 16...	84	.25	76	130	7	.1	5	.00	.53	.07	7.0
AUG, 20...	324	.19	89	120	11	.2	8	.00	.49	.03	4.2
SEP, 22...	12	.21	97	130	11	.2	7	.00	.62	.03	5.6
TIME WTD, AVG,	--	.23	75	134	8	.2	7	.12	1.3	.02	5.5

Due to computer-telemetering oriented problems the monitor data were not available in publishable form for this report for the following stations:

05288550	Mississippi River at Fridley
05288950	Mississippi River at Ford Plant at St. Paul
05330000	Minnesota River near Jordan
05331000	Mississippi River at St. Paul
05331580	Mississippi River below Lock and Dam 2, at Hastings
05345000	Vermillion River near Empire City

Daily values for Dissolved Oxygen, PH, Temperature, and Specific Conductance are available from the district office.

05287000 RUM RIVER AT ANOKA, MINN.

LOCATION.--Lat 45°11'54", long 93°23'28", SE¼SE¼ sec.1, T.31 N., R.25 W., Anoka County, at bridge on Main Street in Anoka, 450 ft (137 m) downstream from dam, and 0.6 mi (1.0 km) upstream from mouth.

DRAINAGE AREA.--1,580 mi² (4,090 km²), approximately.

PERIOD OF RECORD.--Chemical analyses: October 1972 to current year.

REMARKS.--BOD and bacteria data furnished by Metropolitan Waste Control Commission, St. Paul, Minn.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPERATURE (DEG C) (00020)	TEMPERATURE (DEG C) (00010)	INSTANTANEOUS DISCHARGE (CFS) (00061)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L) (70300)	DISSOLVED SOLIDS (TONS PER DAY) (70302)	SUSPENDED SOLIDS (MG/L) (70299)	TURBIDITY (JTU) (00070)	COLOR (PLATINUM-COBALT UNITS) (00080)	DISSOLVED OXYGEN (MG/L) (00300)
OCT. 08...	1030	13.0	9.0	336	290	180	163	3	1	8	11.1
NOV. 15...	1205	2.5	1.5	354	280	190	182	10	3	20	13.0
DEC. 30...	1030	-4.0	.0	297	325	200	160	2	3	20	13.8
JAN. 14...	1030	11.0	.0	456	370	211	260	3	4	20	12.6
21...	1130	-7.0	.0	304	340	225	185	0	6	20	11.2
FEB. 19...	1130	-5.0	.0	335	335	197	178	0	3	10	10.7
MAR. 20...	1130	8.0	.5	467	355	207	261	9	4	20	11.3
APR. 23...	1400	17.0	6.0	6380	134	99	1710	64	14	45	11.2
MAY 30...	1100	16.0	18.0	1290	265	175	610	36	14	45	8.8
JUNE 18...	1115	18.0	18.5	1590	250	172	738	24	12	60	8.9
JULY 17...	1045	29.5	24.0	1430	272	188	726	0	6	70	7.4
AUG. 28...	1000	19.5	20.0	889	260	148	355	44	14	30	9.6
SEP. 23...	1030	14.0	12.0	691	284	190	354	20	3	25	10.8
TIME WTD. AVG.	--	--	--	--	229	183	--	17	--	--	10.8

DATE	CARBON DIOXIDE (CO2) (MG/L) (00405)	PH (UNITS) (00400)	DISSOLVED CALCIUM (CA) (MG/L) (00915)	DISSOLVED MAGNESIUM (MG) (MG/L) (00925)	DISSOLVED SODIUM (NA) (MG/L) (00930)	DISSOLVED POTASSIUM (K) (MG/L) (00935)	ALKALINITY AS CACO3 (MG/L) (00410)	DISSOLVED CHLORIDE (CL) (MG/L) (00940)	DISSOLVED SULFATE (SO4) (MG/L) (00945)	DISSOLVED FLUORIDE (F) (MG/L) (00950)	DISSOLVED AMMONIA NITROGEN (N) (MG/L) (00608)
OCT. 08...	2.3	8.1	40	14	5.1	2.2	148	5.6	11	.3	.04
NOV. 15...	7.0	7.6	40	11	4.9	2.1	143	5.7	11	.1	.06
DEC. 30...	3.2	8.0	46	13	5.8	.3	167	6.7	10	.2	.14
JAN. 14...	16	7.3	46	14	6.0	2.1	165	6.0	12	.2	.18
21...	5.3	7.8	47	13	5.1	2.4	170	5.8	10	.1	.31
FEB. 19...	9.5	7.5	41	14	5.3	2.6	153	5.7	9.6	.1	.18
MAR. 20...	7.7	7.6	44	14	6.3	1.9	157	6.9	9.6	.2	.14
APR. 23...	1.9	7.7	16	4.9	2.4	3.0	48	3.3	8.5	.1	.20
MAY 30...	.8	8.5	33	10	4.2	1.9	122	4.4	6.4	.1	.01
JUNE 18...	1.5	8.2	33	11	3.8	1.3	120	4.5	6.1	.1	.02
JULY 17...	2.0	8.1	38	11	3.8	1.6	130	3.6	5.7	.1	.00
AUG. 28...	1.7	8.1	35	9.5	3.9	1.4	107	5.1	10	.1	.00
SEP. 23...	2.0	8.1	44	5.7	4.8	1.8	132	5.3	8.3	.1	.00
TIME WTD. AVG.	4.7	7.9	39	11	4.7	1.9	136	5.3	9.1	.1	.10

05287000 RUM RIVER AT ANOKA, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	AMMONIA NITRO- GEN (N) (MG/L) (00610)	TOTAL ORGANIC NITRO- GEN (N) (MG/L) (00605)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625)	DIS- SOLVED NITRITE (N) (MG/L) (00613)	DIS- SOLVED NITRATE (N) (MG/L) (00618)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL NITRO- GEN (N) (MG/L) (00600)	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L) (00666)	BIO- CHEM- ICAL OXYGEN DEMAND 5 DAY (MG/L) (00310)	PHENOLS (UG/L) (32730)	FECAL COLI- FORM (COL. PER 100 ML) (31616)
OCT.											
08...	.04	.69	.73	.00	.09	.12	.85	.07	1.4	0	220
NOV.											
15...	.08	.31	.39	.01	.29	.33	.72	.09	1.7	5	32
DEC.											
30...	.14	.53	.67	.01	.97	1.4	2.1	.11	.4	0	10
JAN.											
14...	.18	.82	1.0	.00	.51	.53	1.5	.02	--	3	--
21...	.31	.44	.75	.01	.45	.46	1.2	.09	.7	0	90
FEB.											
19...	.18	.52	.70	.01	.43	.58	1.3	.10	2.4	5	0
MAR.											
20...	.14	.37	.51	.01	.52	.53	1.0	.01	.8	6	10
APR.											
23...	.23	1.2	1.4	.01	.72	.82	2.2	.04	3.8	11	40
MAY											
30...	.02	1.7	1.7	.00	.08	.08	1.8	.04	3.8	4	150
JUNE											
18...	.02	1.1	1.1	.00	.08	.11	1.2	.04	2.6	7	40
JULY											
17...	.00	1.5	1.3	.01	.16	.23	1.5	.10	2.8	8	80
AUG.											
28...	.03	.83	.86	.01	.11	.12	.98	.10	3.5	5	560
SEP.											
23...	.00	.85	.85	.00	.18	.19	1.0	.06	1.5	2	100
TIME WTD. AVG.	.11	.82	.92	.01	.35	.42	1.3	.07	2.1	4	--

DATE	STREP- TOCOCCI (COL- ONIES PER 100 ML) (31679)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303)	PER- CENT SATUR- ATION (00301)	HARD- NESS (CA,MG) (MG/L) (00900)	NON- CAR- BONATE HARD- NESS (MG/L) (00902)	SODIUM AD- SORP- TION RATIO (00931)	PERCENT SODIUM (00932)	DIS SOLVED AMMONIA (NH4) (MG/L) (71846)	DIS SOLVED NITRATE (NO3) (MG/L) (71851)	DIS SOLVED NITRITE (NO2) (MG/L) (71856)	TOTAL NITRO- GEN (NO3) (MG/L) (71887)
OCT.											
08...	56	.24	98	160	9	.2	6	.05	.40	.00	3.8
NOV.											
15...	20	.26	95	150	2	.2	7	.08	1.3	.03	3.2
DEC.											
30...	0	.27	96	170	2	.2	7	.18	4.3	.03	9.2
JAN.											
14...	--	.29	89	170	8	.2	7	.23	2.3	.03	6.8
21...	12	.31	79	170	1	.2	6	.40	2.0	.03	5.4
FEB.											
19...	0	.27	75	160	7	.2	7	.23	1.9	.03	5.7
MAR.											
20...	64	.28	81	170	10	.2	7	.18	2.3	.03	4.6
APR.											
23...	4	.13	93	60	12	.1	8	.26	3.2	.03	9.8
MAY											
30...	4	.24	95	120	1	.2	7	.01	.35	.00	7.9
JUNE											
18...	76	.23	97	130	8	.1	6	.03	.35	.00	5.4
JULY											
17...	112	.26	89	140	10	.1	6	.00	.71	.03	6.8
AUG.											
28...	240	.20	107	130	19	.2	6	.00	.49	.03	4.3
SEP.											
23...	40	.26	103	130	1	.2	7	.00	.80	.03	4.6
TIME WTD. AVG.	--	.25	92	143	7	.2	7	.13	1.6	.02	6.0

05288600 RICE CREEK AT FRIDLEY, MINN.

LOCATION.--Lat 45°05'30", long 93°15'48", in NW¼ sec.14, T.30 N., R.24 W, Anoka County, at State Highway 47 at Fridley, 1.0 mi (1.6 km) upstream from mouth.

PERIOD OF RECORD.--Chemical analyses: October 1972 to current year.

REMARKS.--BOD and bacteria data furnished by Metropolitan Waste Control Commission, St. Paul, Minn.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPERATURE (DEG C) (00020)	TEMPERATURE (DEG C) (00010)	INSTANTANEOUS DISCHARGE (CFS) (00061)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L) (70300)	DISSOLVED SOLIDS (TONS PER DAY) (70302)	SUSPENDED SOLIDS (MG/L) (70299)	TURBIDITY (JTU) (00070)	COLOR (PLATINUM-COBALT UNITS) (00080)	DISSOLVED OXYGEN (MG/L) (00300)
OCT.											
08...	1300	16.5	11.0	7.1	435	285	5.50	8	3	20	11.5
NOV.											
18...	1044	2.5	.5	9.8	482	317	8.39	8	4	20	14.2
DEC.											
30...	1300	3.0	2.5	5.4	600	359	5.23	132	5	20	12.7
JAN.											
24...	1020	1.0	.0	3.2	790	493	4.26	4	2	20	7.3
FEB.											
13...	1300	-10.0	.0	3.0	750	411	3.33	0	2	20	3.8
MAR.											
25...	1100	-4.5	.0	27	590	346	25.2	2	4	20	--
APR.											
24...	1230	13.0	6.0	250	385	232	157	56	13	30	10.4
MAY											
13...	1400	24.5	18.5	1290	320	208	--	66	3	40	9.0
JUNE											
17...	0930	18.0	19.0	260	340	228	160	40	11	62	7.0
JULY											
17...	1345	34.0	26.0	313	314	213	180	32	12	70	5.6
AUG.											
20...	1115	24.5	20.0	142	330	197	75.5	88	26	65	7.9
SEP.											
22...	1330	17.0	13.0	105	351	232	65.8	36	9	80	10.5
TIME WTD. AVG.	--	--	--	--	478	293	--	39	--	--	9.1

DATE	CARBON DIOXIDE (CO2) (MG/L) (00405)	PH (UNITS) (00400)	DISSOLVED CALCIUM (CA) (MG/L) (00915)	DISSOLVED MAGNESIUM (MG) (MG/L) (00925)	DISSOLVED SODIUM (NA) (MG/L) (00930)	DISSOLVED POTASSIUM (K) (MG/L) (00935)	ALKALINITY AS CACO3 (MG/L) (00410)	DISSOLVED CHLORIDE (CL) (MG/L) (00940)	DISSOLVED SULFATE (SO4) (MG/L) (00945)	DISSOLVED FLUORIDE (F) (MG/L) (00950)	DISSOLVED AMMONIA NITROGEN (N) (MG/L) (00608)
OCT.											
08...	1.7	8.3	49	16	24	3.0	170	36	26	.3	.06
NOV.											
18...	2.2	8.2	58	16	24	3.6	176	42	30	.1	.75
DEC.											
30...	4.3	8.0	72	20	25	3.7	222	51	30	.2	.97
JAN.											
24...	6.8	7.8	70	18	69	4.4	221	120	43	.2	1.6
FEB.											
13...	14	7.5	79	21	31	4.6	235	57	43	.2	1.6
MAR.											
25...	6.3	7.7	57	17	38	5.1	162	69	40	.2	1.1
APR.											
24...	4.0	7.8	43	12	17	3.3	130	29	23	.1	1.4
MAY											
13...	1.2	8.3	39	11	8.8	3.4	121	17	20	.1	.00
JUNE											
17...	2.5	8.0	44	12	13	3.3	130	23	16	.1	.06
JULY											
17...	2.7	8.0	41	12	7.9	3.2	136	13	9.2	.1	.00
AUG.											
20...	.8	8.5	41	10	10	2.8	128	16	15	.1	.03
SEP.											
22...	.9	8.5	41	12	9.4	3.3	140	15	11	.2	.00
TIME WTD. AVG.	4.0	8.1	53	15	23	3.7	164	41	26	.2	.63

05288600 RICE CREEK AT FRIDLEY, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	AMMONIA NITRO-GEN (N) (MG/L) (00610)	TOTAL ORGANIC NITRO-GEN (N) (MG/L) (00605)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L) (00625)	DIS-SOLVED NITRITE (N) (MG/L) (00613)	DIS-SOLVED NITRATE (N) (MG/L) (00618)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL NITRO-GEN (N) (MG/L) (00600)	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)	BIO-CHEM-ICAL OXYGEN DEMAND 5 DAY (MG/L) (00310)	PHENOLS (UG/L) (32730)	FECAL COLI-FORM (COL, PER 100 ML) (31616)
OCT, 08...	,10	1,5	1,6	,01	.27	,28	1,9	,00	3,4	1	150
NOV, 18...	,78	1,1	1,9	,00	.40	,40	2,3	,01	1,2	4	19
DEC, 30...	1,1	,90	2,0	,01	,53	,66	2,7	,00	1,4	0	30
JAN, 24...	1,6	,70	2,3	,01	,53	,54	2,8	,04	1,0	12	70
FEB, 13...	1,6	,50	2,1	,00	,54	,55	2,7	,03	1,4	5	80
MAR, 25...	1,2	,60	1,8	,02	.33	,35	2,2	,04	2,0	1	0
APR, 24...	1,5	1,1	2,6	,04	,58	,62	3,2	,02	3,6	6	100
MAY 13...	,00	1,3	1,3	,01	,08	,09	1,4	,01	4,4	8	50
JUNE 17...	,11	1,4	1,5	,04	,25	,29	1,8	,03	3,1	8	460
JULY 17...	,03	1,8	1,8	,02	,11	,16	2,0	,16	4,6	9	10
AUG, 20...	,04	3,1	3,1	,02	,12	,18	3,3	,07	8,2	4	1500
SEP, 22...	,00	3,2	3,2	,01	,03	,04	3,2	,01	2,1	7	50
TIME WTD, AVG,	,67	1,4	2,1	,02	,32	,35	2,5	,04	3,0	5	--

DATE	STREP-TOCOCCI (COL-ONIES PER 100 ML) (31679)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	PER-CENT SATUR-ATION (00301)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	PERCENT SODIUM (00932)	DIS SOLVED AMMONIA (NH4) (MG/L) (71846)	DIS SOLVED NITRATE (NO3) (MG/L) (71851)	DIS SOLVED NITRITE (NO2) (MG/L) (71856)	TOTAL NITRO-GEN (NO3) (MG/L) (71887)
OCT, 08...	250	,39	106	190	18	,8	21	,08	1,2	,03	8,3
NOV, 18...	68	,43	101	210	34	,7	20	,97	1,9	,00	10
DEC, 30...	0	,49	96	260	40	,7	17	1,3	2,3	,03	12
JAN, 24...	0	,67	51	250	28	1,9	37	2,1	2,3	,03	13
FEB, 13...	12	,56	26	280	49	,8	19	2,1	2,4	,00	12
MAR, 25...	88	,47	--	210	50	1,1	27	1,4	1,6	,07	9,5
APR, 24...	0	,32	86	160	26	,6	19	1,8	2,6	,13	14
MAY 13...	20	,28	99	140	21	,3	12	,00	,35	,03	6,2
JUNE 17...	32	,31	77	160	29	,4	15	,08	1,1	,13	7,9
JULY 17...	64	,29	70	150	16	,3	10	,00	,49	,07	8,7
AUG, 20...	1600	,27	88	140	16	,4	13	,04	,53	,07	15
SEP, 22...	52	,32	102	150	12	,3	12	,00	,13	,03	14
TIME WTD, AVG,	--	,40	82	192	28	,7	19	,82	1,4	,05	11

05291000 WHETSTONE RIVER NEAR BIG STONE CITY, S. DAK.

LOCATION.--Lat 45°17'32", long 96°29'14", in SE¼NW¼ sec.18, T.121 N , R.46 W., Grant County, at gaging station on right bank 20 ft (6 m) downstream from highway bridge, 1.5 mi (2.4 km) west of Big Stone City, and 4.5 mi (7.2 km) upstream from Big Stone Lake.

DRAINAGE AREA.--389 mi² (1,008 km²).

PERIOD OF RECORD.--Chemical analyses: June 1960 to March 1962, and October 1966 to June 1969.
Specific conductance: October 1973 to current year
Water temperature: October 1973 to current year.
Sediment records: Water years 1961, 1962 (partial-record station), October 1973 to current year.

EXTREMES.--Current year:
Specific conductance: Maximum daily observed, 1,280 micromhos Dec. 29; minimum daily observed, 504 micromhos Apr. 19.
Water temperature: Maximum, 30°C July 2-4; minimum, freezing point on many days during winter period.
Sediment concentration: Maximum daily, 451 mg/l Apr. 19; minimum daily, 12 mg/l Apr. 3.
Sediment discharge: Maximum daily, 1,090 tons (989 tonnes) Apr. 19; minimum daily, 0.04 tons (0.04 tonnes) Feb. 15-17.

Period of record:
Specific conductance: Maximum daily observed, 1,360 micromhos Jan. 9, 1974; minimum daily observed, 459 micromhos Mar. 3, 1974.
Water temperature: Maximum, 34°C July 7, 1974; minimum, freezing point on many days during winter period.
Sediment concentration: Maximum daily, 671 mg/l Apr. 3, 1974; minimum daily, 6 mg/l Mar. 3, 1974.
Sediment discharge: Maximum daily, 1,090 tons (989 tonnes) Apr. 19, 1975; minimum daily, 0.04 tons (0.04 tonnes) Feb. 15-17, 1975.

REMARKS.--Flow affected by ice during winter period.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1180	---	1130	---	---	---	---	931	1010	1030	750	850
2	1180	981	1060	---	---	---	---	968	---	1050	750	950
3	1130	---	---	---	---	---	1150	968	986	1020	775	875
4	---	950	---	---	---	---	---	---	890	1020	---	---
5	1130	---	---	---	---	---	---	1100	880	1020	725	---
6	1130	1130	---	---	---	---	---	1160	---	1000	775	---
7	1130	1130	---	---	---	---	---	1100	900	900	800	950
8	1090	1090	---	---	---	---	---	1050	880	1020	725	1100
9	1050	1180	---	---	---	---	---	1050	870	1020	800	---
10	---	1180	---	---	---	---	1210	1100	870	1030	800	1050
11	1050	1180	---	---	---	---	1150	1100	860	1010	800	950
12	1050	1130	---	---	---	---	1010	1100	760	1010	800	1150
13	1050	1130	---	---	---	---	834	---	---	1010	725	---
14	1020	1130	---	---	---	---	896	1050	850	1010	850	---
15	1020	1130	---	---	756	---	864	1050	880	1010	---	900
16	1020	1180	1030	---	---	---	872	---	1040	1010	800	950
17	1020	1180	---	1100	---	---	637	1100	1000	---	675	---
18	---	1130	---	---	---	---	---	1050	960	980	675	---
19	1020	1130	---	---	---	773	504	1050	---	840	700	825
20	1020	1050	---	864	---	835	---	1100	850	990	675	850
21	1020	1050	---	---	---	712	572	1100	880	990	700	975
22	1040	1020	---	781	---	672	654	1050	---	940	700	775
23	981	1020	1010	---	756	---	733	1100	1010	1010	775	925
24	981	1020	---	---	---	---	756	1010	1010	1010	775	1000
25	981	---	---	---	---	---	752	1010	1040	850	900	950
26	981	775	---	---	1210	---	807	1010	1040	---	925	1000
27	1130	---	---	---	---	---	864	1010	---	990	975	1000
28	981	1130	---	---	---	---	834	1010	1050	---	850	---
29	981	1130	1280	---	---	---	864	---	1050	923	775	975
30	981	1130	---	733	---	---	896	1010	1000	700	950	950
31	---	---	---	---	---	---	---	1010	---	725	850	---
MONTH	1050	1090	---	---	---	---	---	1050	940	971	785	---
YEAR	MAX	1280	MIN	504	MEAN	959						

05291000 WHETSTONE RIVER NEAR BIG STONE CITY, S. DAK.--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11.0	---	2.0	---	---	---	---	10.0	18.0	28.0	26.0	23.0
2	10.0	8.0	1.0	---	---	---	---	12.0	---	30.0	25.0	23.0
3	12.0	---	---	---	---	---	1.0	15.0	18.0	30.0	25.0	23.0
4	---	---	---	---	---	---	---	---	20.0	30.0	---	---
5	11.0	---	---	---	---	---	---	20.0	21.0	29.0	26.0	---
6	8.0	10.0	---	---	---	---	---	14.5	---	29.0	25.0	---
7	---	7.0	---	---	---	---	---	13.0	19.0	---	26.0	20.0
8	14.0	6.0	---	---	---	---	---	13.0	18.0	---	25.0	20.0
9	13.0	6.0	---	---	---	---	---	18.0	17.0	26.0	28.0	18.5
10	---	6.0	---	---	---	---	1.0	17.0	20.0	26.0	28.0	21.0
11	10.0	7.0	---	---	---	---	2.0	16.0	20.0	25.0	23.0	17.0
12	11.0	4.0	---	---	---	---	3.0	18.0	25.0	25.0	22.0	16.0
13	12.0	4.0	---	---	---	---	2.0	---	---	28.0	23.0	---
14	10.0	4.0	---	---	---	---	2.0	18.0	15.0	28.0	23.0	---
15	10.0	5.0	---	---	1.0	---	3.0	19.0	19.0	26.0	---	17.0
16	11.0	5.0	1.0	---	---	---	1.0	---	20.0	28.0	21.0	22.0
17	11.0	5.0	---	1.0	---	---	3.0	20.0	21.0	---	21.0	---
18	---	6.0	---	---	---	---	---	25.0	21.0	28.0	22.0	---
19	10.0	6.0	---	---	---	1.0	1.0	20.0	---	28.0	21.0	14.0
20	9.0	4.0	---	0.0	---	0.0	---	20.0	21.0	28.0	24.0	12.0
21	10.0	4.0	---	---	---	2.0	3.0	20.0	25.0	27.0	24.0	12.0
22	9.5	5.0	---	1.0	---	1.0	8.0	19.0	---	25.0	23.0	14.0
23	10.0	5.0	0.0	---	1.0	---	8.0	19.0	25.0	25.0	26.0	14.0
24	10.0	5.0	---	---	---	---	7.0	19.0	27.0	25.0	24.0	14.0
25	10.0	---	---	---	---	---	7.0	17.0	28.0	25.0	22.0	14.0
26	12.0	4.0	---	---	0.0	---	8.0	20.0	28.0	25.0	23.0	12.0
27	15.0	---	---	---	---	---	8.0	18.0	---	26.0	22.0	13.0
28	16.0	4.0	---	---	---	---	8.0	23.0	27.0	---	22.0	---
29	14.0	3.0	2.0	---	---	---	9.0	---	27.0	29.5	22.0	12.0
30	15.0	2.0	---	1.0	---	---	8.0	17.0	28.0	28.0	---	10.0
31	---	---	---	---	---	---	---	17.0	---	30.0	23.0	---
MONTH	11.5	5.0	---	---	---	---	---	17.5	22.0	27.5	24.0	---
YEAR	MAX	30.0	MIN	0.0	MEAN	15.5						

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	NUMBER OF SAM- PLING POINTS	INSTAN- TANEOUS DIS- CHARGE (CFS)	BED MAT. FALL DIAM. % FINER THAN .062 MM	BED MAT. FALL DIAM. % FINER THAN .125 MM	BED MAT. FALL DIAM. % FINER THAN .250 MM	BED MAT. FALL DIAM. % FINER THAN .500 MM	BED MAT. FALL DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM
NOV. 06...	1400	4	4.8	1	4	10	30	37	42	47	50	100

05291000 WHETSTONE RIVER NEAR BIG STONE CITY, S. DAK.--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER			NOVEMBER			DECEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	1.5	70	.28	5.3	53	.76	4.1	73	.81
2	1.6	68	.29	5.9	43	.69	4.1	50	.55
3	1.6	67	.29	5.0	41	.55	4.1	36	.40
4	1.8	66	.32	4.9	50	.66	4.0	35	.38
5	1.8	65	.32	4.9	68	.90	4.0	38	.41
6	1.9	64	.33	4.8	94	1.2	3.9	42	.44
7	2.2	68	.40	4.7	80	1.0	3.8	43	.44
8	1.9	73	.37	4.9	80	1.1	3.8	45	.46
9	1.9	75	.38	4.8	78	1.0	4.0	46	.50
10	2.1	78	.44	4.7	85	1.1	4.2	47	.53
11	2.1	79	.45	4.5	38	.46	4.3	46	.53
12	2.2	80	.48	4.7	40	.51	4.3	46	.53
13	2.3	80	.50	4.6	33	.41	4.3	45	.52
14	2.3	81	.50	4.4	45	.53	4.3	43	.50
15	2.5	85	.57	4.4	64	.76	4.3	41	.48
16	2.6	93	.65	4.4	19	.23	4.3	42	.49
17	2.7	100	.73	4.4	21	.25	4.3	46	.53
18	2.5	103	.70	4.4	24	.29	4.3	49	.57
19	2.7	101	.74	4.4	14	.17	4.3	53	.62
20	2.8	107	.81	4.5	33	.40	4.3	55	.64
21	2.7	115	.84	4.5	23	.28	4.3	58	.67
22	2.7	114	.83	4.4	38	.45	4.3	60	.70
23	2.6	109	.77	4.3	34	.39	4.3	63	.73
24	2.9	103	.81	4.3	48	.56	4.3	65	.75
25	3.0	115	.93	4.2	63	.71	4.3	68	.79
26	3.1	132	1.1	4.2	60	.68	4.3	70	.81
27	3.0	123	1.0	4.2	62	.70	4.2	74	.84
28	3.2	114	.99	4.1	66	.73	4.2	75	.85
29	3.4	103	.95	4.1	34	.38	4.2	77	.87
30	3.5	84	.79	4.1	33	.37	4.2	75	.85
31	4.2	65	.74	---	---	---	4.1	73	.81

	JANUARY			FEBRUARY			MARCH		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	4.1	71	.79	.79	43	.09	6.1	15	.25
2	4.0	69	.75	.79	44	.09	6.2	15	.25
3	4.0	68	.73	.79	44	.09	6.3	16	.27
4	3.9	68	.72	.79	44	.09	6.3	18	.31
5	3.8	66	.68	.79	43	.09	6.4	18	.31
6	3.7	65	.65	.79	43	.09	6.4	20	.35
7	3.6	64	.62	.79	42	.09	6.4	20	.35
8	3.4	63	.58	.79	40	.09	6.4	22	.38
9	3.2	60	.52	.79	38	.08	6.4	23	.40
10	3.0	59	.48	.79	36	.08	6.5	25	.44
11	2.5	58	.39	.79	33	.07	6.5	26	.46
12	2.0	56	.30	.79	30	.06	6.6	26	.46
13	1.3	54	.19	.79	27	.06	6.6	27	.48
14	1.2	51	.17	.79	24	.05	6.7	27	.49
15	1.0	48	.13	.80	20	.04	7.0	28	.53
16	.90	46	.11	.80	20	.04	8.0	33	.71
17	.82	43	.10	.80	20	.04	9.5	39	1.0
18	.80	40	.09	1.0	20	.05	13	51	1.8
19	.79	38	.08	1.7	20	.09	36	55	5.3
20	.79	35	.07	2.5	19	.13	69	47	8.8
21	.79	33	.07	3.5	19	.18	40	32	3.5
22	.79	33	.07	4.2	18	.20	64	37	6.4
23	.79	37	.08	4.6	17	.21	55	49	7.3
24	.79	40	.09	5.0	16	.22	35	52	4.9
25	.79	42	.09	5.4	15	.22	28	54	4.1
26	.79	43	.09	5.6	13	.20	21	53	3.0
27	.79	43	.09	5.8	13	.20	19	50	2.6
28	.79	42	.09	6.0	14	.23	17	48	2.2
29	.79	42	.09	---	---	---	16	43	1.9
30	.79	42	.09	---	---	---	15	36	1.5
31	.79	43	.09	---	---	---	14	31	1.2

05291000 WHETSTONE RIVER NEAR BIG STONE CITY, S. DAK.--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL			MAY			JUNE		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	13	25	.88	221	56	33	10	57	1.5
2	13	18	.63	177	38	18	11	51	1.5
3	13	12	.42	156	31	13	9.8	54	1.4
4	13	18	.63	133	36	13	9.4	59	1.5
5	13	25	.88	115	36	11	9.2	73	1.8
6	13	30	1.1	93	31	7.8	8.7	98	2.3
7	13	35	1.2	81	57	12	8.9	104	2.5
8	13	40	1.4	73	40	7.9	8.5	101	2.3
9	13	44	1.5	66	32	5.7	9.3	108	2.7
10	13	45	1.6	62	37	6.2	10	58	1.6
11	14	33	1.2	57	38	5.8	10	70	1.9
12	25	22	1.5	51	28	3.9	10	109	2.9
13	32	45	3.9	45	29	3.5	9.1	135	3.3
14	45	38	4.6	41	38	4.2	10	140	3.8
15	95	126	32	36	47	4.6	15	98	4.0
16	151	195	80	32	45	3.9	17	64	2.9
17	228	242	149	29	45	3.5	21	61	3.5
18	569	338	519	27	49	3.6	35	34	3.2
19	899	451	1090	25	65	4.4	42	34	3.9
20	630	277	471	24	80	5.2	39	43	4.5
21	443	141	169	21	83	4.7	32	56	4.8
22	411	133	148	20	77	4.2	25	68	4.6
23	373	143	144	29	64	5.0	20	71	3.8
24	376	100	102	29	58	4.5	17	68	3.1
25	348	93	87	23	51	3.2	14	51	1.9
26	324	123	108	20	49	2.6	13	49	1.7
27	338	152	139	17	51	2.3	13	68	2.4
28	374	82	83	15	58	2.3	11	93	2.8
29	303	76	62	13	63	2.2	9.7	109	2.9
30	263	60	43	13	65	2.3	8.7	107	2.5
31	---	---	---	11	66	2.0	---	---	---

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	7.6	108	2.2	1.5	59	.24	2.0	56	.30
2	6.9	107	2.0	1.8	97	.47	2.0	65	.35
3	6.1	95	1.6	1.6	27	.12	2.1	67	.38
4	5.8	79	1.2	1.5	42	.17	2.1	70	.40
5	5.3	59	.84	1.5	49	.20	2.1	71	.40
6	4.9	44	.58	1.5	39	.16	2.1	72	.41
7	4.6	41	.51	1.5	43	.17	2.2	72	.43
8	4.2	45	.51	1.5	44	.18	2.4	72	.47
9	3.4	51	.47	1.5	46	.19	2.5	65	.44
10	3.3	55	.49	1.5	44	.18	2.5	47	.32
11	3.2	71	.61	1.5	50	.20	2.4	51	.33
12	3.6	64	.62	1.5	52	.21	2.3	60	.37
13	3.7	49	.49	1.5	73	.30	2.2	61	.36
14	3.4	47	.43	1.6	96	.41	2.2	71	.42
15	3.0	45	.37	1.6	113	.49	2.1	76	.43
16	3.0	48	.39	1.7	121	.56	2.0	67	.36
17	2.9	49	.38	2.0	89	.48	1.9	65	.33
18	2.6	48	.34	2.1	95	.54	1.8	67	.33
19	2.6	19	.13	2.6	89	.62	1.8	71	.35
20	2.6	14	.10	2.9	82	.64	1.7	52	.24
21	2.5	40	.27	2.6	82	.58	1.7	48	.22
22	2.3	44	.27	2.4	83	.54	1.7	68	.31
23	2.1	41	.23	2.4	84	.54	1.7	71	.33
24	2.1	40	.23	2.3	84	.52	1.7	75	.34
25	2.0	40	.22	1.7	83	.38	1.8	119	.58
26	1.7	39	.18	1.6	83	.36	1.7	134	.62
27	1.5	42	.17	1.7	92	.42	2.2	123	.73
28	1.3	50	.18	2.3	65	.40	2.6	95	.67
29	1.2	62	.20	2.1	62	.35	2.4	71	.46
30	1.2	60	.19	2.1	62	.35	2.7	55	.40
31	1.3	40	.14	2.1	53	.30	---	---	---

05293000 YELLOW BANK RIVER NEAR ODESSA, MINN.

LOCATION.--Lat 45°13'35", long 96°21'12", in SE¼SE¼ sec. 1, T.120 N., R.46 W., Lac qui Parle County, at gaging station on left bank 150 ft (46 m) downstream from highway bridge, 2.5 mi (4 km) southwest of Odessa, and 4.5 mi (7.2 km) upstream from mouth.

DRAINAGE.--398 mi² (1,031 km²).

PERIOD OF RECORD.--Chemical analyses: October 1960 to March 1962.
Specific conductance: October 1973 to current year.
Water temperature: October 1973 to current year.
Sediment records: Water year 1961 (partial-record station), October 1973 to current year.

EXTREMES.--Current year:
Specific conductance: Maximum daily observed, 1,050 micromhos Dec. 21; minimum daily observed, 410 micromhos Mar. 21, 22.
Water temperature: Maximum daily, 29°C July 17; minimum, freezing point on many days during winter period.
Sediment concentration: Maximum daily, 500 mg/l Apr. 19; minimum daily, 24 mg/l Nov. 27.
Sediment discharge: Maximum daily, 640 tons (581 tonnes) April 9; minimum daily, 0.05 tons (0.05 tonnes) Aug. 14.

Period of record:
Specific conductance: Maximum daily observed, 1,090 micromhos Dec. 12, 13, 14, 1973; minimum daily observed, 370 micromhos Mar. 6, 1974.
Water temperature: Maximum daily observed, 29°C July 10, 1974, July 17, 1975; minimum, freezing point on many days during winter periods.
Sediment concentration: Maximum daily, 500 mg/l Apr. 19, 1975; minimum daily, 12 mg/l Mar. 21, 1974.
Sediment discharge: Maximum daily, 640 tons (581 tonnes) Apr. 19, 1975; minimum daily, 0.04 tonnes) Sept. 11, 1974.

REMARKS.--Flow affected by ice during winter.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	884	775	892	834	---	712	---	672	931	750	625	600
2	899	775	879	834	---	---	---	733	931	750	580	625
3	930	818	892	834	---	---	590	733	842	770	675	560
4	899	818	892	834	---	---	---	733	800	770	625	700
5	899	818	920	834	---	---	---	733	780	780	560	650
6	930	818	981	834	---	---	658	823	800	780	540	650
7	930	818	920	834	---	---	---	834	800	780	800	560
8	899	796	920	841	---	---	---	834	800	810	650	650
9	841	818	950	---	834	712	---	834	780	830	650	812
10	841	818	950	---	---	---	590	834	800	620	750	700
11	818	818	950	---	---	---	---	864	800	850	675	850
12	841	841	981	---	---	---	---	834	800	860	700	700
13	841	796	981	---	---	---	526	864	800	830	580	700
14	841	775	950	---	---	733	---	864	800	850	700	650
15	866	796	950	---	807	---	465	864	750	880	700	775
16	866	818	950	---	---	---	602	896	800	750	590	875
17	841	818	1020	---	---	756	550	896	770	890	650	900
18	841	796	950	834	---	---	563	931	700	870	520	750
19	841	818	920	---	---	448	511	896	700	900	560	850
20	818	775	1020	---	781	485	475	931	760	925	650	750
21	841	796	1050	---	---	410	507	896	720	900	590	725
22	818	818	1020	834	---	410	475	896	680	870	650	825
23	841	818	981	---	538	---	576	896	700	850	510	750
24	841	818	834	---	---	---	605	896	720	870	570	900
25	892	841	864	---	---	590	605	931	679	850	675	725
26	866	920	931	---	807	---	621	931	670	900	550	900
27	866	866	834	---	---	---	621	896	700	900	700	875
28	866	866	781	---	---	---	672	931	680	520	700	850
29	818	892	807	---	---	---	733	931	750	650	530	750
30	830	950	834	---	---	---	672	931	750	550	580	750
31	818	---	834	834	---	---	---	931	---	575	650	---
MONTH	860	824	924	---	---	---	---	860	766	803	629	745
YEAR	MAX	1050	MIN	410	MEAN	780						

05293000 YELLOW BANK RIVER NEAR ODESSA, MINN.--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10.5	10.5	---	1.0	---	0.0	---	7.0	14.5	26.5	24.0	22.5
2	10.0	8.0	0.5	0.5	---	---	---	9.0	15.0	26.0	23.0	20.0
3	11.5	4.5	---	0.0	---	---	0.0	8.0	17.5	28.5	20.5	19.5
4	8.0	4.0	---	0.0	---	---	---	7.0	17.5	26.5	24.0	18.0
5	7.0	4.5	---	0.0	---	---	---	12.0	19.0	28.0	25.0	17.5
6	8.0	3.5	---	0.0	---	---	0.5	14.0	18.0	22.5	24.0	16.0
7	8.0	3.0	---	---	---	---	---	12.5	18.0	27.5	24.0	16.5
8	11.0	4.5	1.0	0.0	---	---	---	11.0	17.5	25.0	27.0	13.5
9	11.0	5.0	1.0	---	0.0	0.0	---	13.0	15.0	24.5	26.0	17.0
10	13.0	5.0	2.0	---	---	---	1.0	13.0	17.0	20.0	23.0	21.5
11	---	3.0	2.0	---	---	---	---	12.0	17.0	20.0	23.0	16.0
12	12.0	5.0	1.5	---	---	---	---	15.0	19.0	20.5	---	13.0
13	8.5	3.0	0.5	---	---	---	0.5	15.0	20.0	---	23.0	10.0
14	10.0	2.0	0.5	---	---	0.0	---	14.0	17.0	---	19.5	10.0
15	9.5	2.0	0.5	---	0.0	---	1.0	16.0	14.5	---	20.0	10.0
16	10.0	2.0	1.0	---	---	---	0.5	15.0	18.0	28.0	19.0	16.5
17	11.5	1.0	0.0	---	---	0.0	1.5	14.0	18.5	29.0	18.0	15.5
18	12.0	---	0.5	0.0	---	---	2.0	15.0	19.5	25.0	20.0	15.5
19	9.5	---	0.0	---	---	1.0	1.5	18.0	19.5	24.0	18.5	12.5
20	9.5	---	0.5	---	0.0	0.5	1.0	21.0	24.0	22.0	22.0	5.0
21	10.0	---	0.0	---	---	1.5	1.0	15.5	23.0	22.0	22.0	6.0
22	10.0	---	0.0	0.0	---	1.0	1.5	14.5	21.0	23.0	20.5	9.5
23	9.5	---	0.0	---	1.0	---	1.5	15.0	24.5	23.5	23.0	12.0
24	9.5	---	0.0	---	---	---	3.0	17.5	23.0	24.0	22.0	13.0
25	9.5	---	0.0	---	---	0.0	3.0	17.5	24.0	22.5	18.0	11.0
26	9.0	---	0.5	---	0.0	---	2.5	16.0	25.0	23.5	18.0	14.5
27	10.0	---	0.5	---	---	---	5.0	17.0	25.0	21.0	20.5	10.5
28	11.5	---	0.5	---	---	---	6.5	17.0	21.0	24.0	20.5	8.0
29	10.5	---	0.0	---	---	---	8.0	18.0	21.0	28.5	20.5	12.5
30	12.0	---	1.0	---	---	---	7.0	15.5	24.0	23.0	18.0	10.0
31	12.0	---	0.5	0.0	---	---	---	15.0	---	28.0	19.0	---
MONTH	10.0	---	0.5	---	---	---	---	14.0	19.5	24.5	21.5	14.0
YEAR	MAX	29.0	MIN	0.0	MEAN	12.0						

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	NUMBER OF SAMPLING POINTS	INSTANTANEOUS DISCHARGE (CFS)	BED MAT. FALL DIAM. % FINER THAN .062 MM	BED MAT. FALL DIAM. % FINER THAN .125 MM	BED MAT. FALL DIAM. % FINER THAN .250 MM	BED MAT. FALL DIAM. % FINER THAN .500 MM	BED MAT. FALL DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM
NOV. 06...	1545	4	1.9	1	6	9	35	75	81	88	100

05293000 YELLOW BANK RIVER NEAR ODESSA, MINN.--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER			NOVEMBER			DECEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	.45	150	.18	5.6	118	1.8	2.8	35	.26
2	.48	179	.23	3.1	135	1.1	2.8	51	.39
3	.44	164	.19	2.5	113	.76	2.8	51	.39
4	.47	133	.17	1.9	123	.63	2.7	64	.47
5	.59	143	.23	1.6	128	.55	2.6	84	.59
6	.63	121	.21	2.0	118	.64	2.4	104	.67
7	.62	110	.18	2.8	82	.62	2.3	95	.59
8	.51	118	.16	3.0	126	1.0	2.2	48	.29
9	.54	135	.20	3.1	146	1.2	2.1	67	.38
10	.55	156	.23	3.1	139	1.2	2.1	93	.53
11	.59	179	.29	3.1	117	.98	2.2	109	.65
12	.54	195	.28	3.1	98	.82	2.3	118	.73
13	.49	187	.25	3.0	83	.67	2.5	100	.68
14	.38	170	.17	3.0	83	.67	2.7	82	.60
15	.37	173	.17	2.9	88	.69	2.8	70	.53
16	.31	184	.15	2.8	85	.64	2.8	66	.50
17	.31	194	.16	2.8	75	.57	2.8	71	.54
18	.26	203	.14	2.8	61	.46	2.7	79	.58
19	.30	204	.17	2.7	50	.36	2.6	84	.59
20	.30	198	.16	2.7	46	.34	2.5	88	.59
21	1.3	174	.61	2.7	48	.35	2.5	101	.68
22	2.6	189	1.3	2.7	50	.36	2.4	108	.70
23	1.3	195	.68	2.7	50	.36	2.4	113	.73
24	.64	193	.33	2.7	50	.36	2.3	113	.70
25	.90	184	.45	2.7	79	.58	2.3	109	.68
26	.77	172	.36	2.8	59	.45	2.3	103	.64
27	.98	168	.44	2.8	24	.18	2.3	99	.61
28	1.3	174	.61	2.8	45	.34	2.3	100	.62
29	2.6	169	1.2	2.8	78	.59	2.4	103	.67
30	1.8	156	.76	2.8	79	.60	2.5	105	.71
31	3.3	139	1.2	---	---	---	2.7	108	.79

	JANUARY			FEBRUARY			MARCH		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	2.7	108	.79	2.7	103	.75	2.8	65	.49
2	2.8	96	.73	2.7	108	.79	2.8	63	.48
3	2.8	70	.53	2.7	112	.82	2.8	58	.44
4	2.8	68	.51	2.7	115	.84	2.8	56	.42
5	2.8	93	.70	2.7	118	.86	2.8	54	.41
6	2.8	116	.88	2.7	120	.87	2.5	50	.34
7	2.8	124	.94	2.7	122	.89	2.3	48	.30
8	2.8	154	1.2	2.7	124	.90	2.4	45	.29
9	2.8	148	1.1	2.7	126	.92	2.5	43	.29
10	2.8	127	.96	2.7	128	.93	2.6	43	.30
11	2.3	120	.75	2.7	130	.95	2.6	43	.30
12	2.0	118	.64	2.7	133	.97	2.6	47	.33
13	2.1	116	.66	2.7	135	.98	2.6	60	.42
14	2.4	114	.74	2.7	138	1.0	2.6	75	.53
15	2.5	111	.75	2.7	139	1.0	2.8	89	.67
16	2.6	108	.76	2.7	138	1.0	3.4	101	.93
17	2.6	107	.75	2.7	135	.98	5.0	109	1.5
18	2.6	104	.73	2.7	130	.95	7.2	103	2.0
19	2.6	103	.72	2.7	120	.87	18	83	4.0
20	2.6	100	.70	2.7	109	.79	38	45	4.6
21	2.6	97	.68	2.7	98	.71	110	54	16
22	2.6	94	.66	2.7	86	.63	92	35	8.7
23	2.6	93	.65	2.7	77	.56	80	29	6.3
24	2.7	94	.69	2.8	74	.56	75	35	7.1
25	2.7	95	.69	2.9	72	.56	73	48	9.5
26	2.7	98	.71	2.9	72	.56	72	55	11
27	2.7	98	.71	2.9	70	.55	72	60	12
28	2.7	99	.72	2.8	68	.51	72	62	12
29	2.7	100	.73	---	---	---	68	62	11
30	2.7	100	.73	---	---	---	65	63	11
31	2.7	101	.74	---	---	---	60	63	10

05293000 YELLOW BANK RIVER NEAR ODESSA, MINN.--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL			MAY			JUNE		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	58	61	9.6	221	86	51	17	44	2.0
2	57	58	8.9	189	78	40	16	45	1.9
3	56	55	8.3	166	142	64	15	41	1.7
4	56	50	7.6	147	125	50	14	39	1.5
5	56	44	6.7	127	136	47	13	36	1.3
6	57	40	6.2	114	111	34	12	31	1.0
7	59	41	6.5	102	105	29	12	28	.91
8	62	40	6.7	92	77	19	11	27	.80
9	75	41	8.3	84	80	18	12	32	1.0
10	82	44	9.7	75	77	16	12	39	1.3
11	98	53	14	68	68	12	12	47	1.5
12	106	63	18	63	71	12	12	27	.87
13	108	69	20	59	80	13	14	41	1.6
14	99	69	18	55	78	12	15	38	1.5
15	88	68	15	51	71	9.8	21	65	3.7
16	87	98	23	48	61	7.9	18	51	2.5
17	97	158	41	43	53	6.2	18	49	2.4
18	210	415	235	39	49	5.2	24	53	3.4
19	474	500	640	38	49	5.0	24	55	3.6
20	612	363	600	36	47	4.6	25	53	3.6
21	490	324	429	36	41	4.0	25	48	3.2
22	382	271	280	45	44	5.3	21	58	3.3
23	349	199	188	38	39	4.0	19	63	3.2
24	342	169	156	37	42	4.2	18	61	3.0
25	343	177	164	32	48	4.1	16	57	2.5
26	310	148	124	30	39	3.2	15	47	1.9
27	313	219	185	27	71	5.2	14	48	1.8
28	320	166	143	25	54	3.6	11	68	2.0
29	295	114	91	22	52	3.1	9.8	71	1.9
30	258	120	84	20	36	1.9	8.7	78	1.8
31	---	---	---	18	27	1.3	---	---	---

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	7.9	90	1.9	.79	102	.22	.57	102	.16
2	7.0	80	1.5	1.2	114	.37	.41	100	.11
3	6.1	74	1.2	1.0	102	.28	.33	104	.09
4	5.4	63	.92	.66	101	.18	.35	102	.10
5	4.9	73	.97	.66	110	.20	.44	94	.11
6	4.5	68	.83	1.8	131	.64	.43	86	.10
7	4.1	64	.71	1.0	125	.34	.40	86	.09
8	3.8	60	.62	.53	109	.16	.41	89	.10
9	3.6	64	.62	.48	105	.14	.41	96	.11
10	3.2	57	.49	.49	109	.14	.51	108	.15
11	3.2	59	.51	.49	118	.16	.51	142	.20
12	3.7	61	.61	.42	120	.14	.37	100	.10
13	3.5	52	.49	.33	103	.09	.30	82	.07
14	3.2	42	.36	.23	74	.05	.29	73	.06
15	2.8	41	.31	.31	66	.06	.26	96	.07
16	2.5	48	.32	.45	57	.07	.19	160	.08
17	2.1	64	.36	.72	82	.16	.20	193	.10
18	2.1	67	.38	.83	108	.24	.29	127	.10
19	2.4	60	.39	.80	120	.26	.32	110	.10
20	3.2	55	.48	.98	114	.30	.30	102	.08
21	3.6	60	.58	.77	112	.23	.37	78	.08
22	3.2	49	.42	.66	112	.20	.37	80	.08
23	5.3	39	.56	.50	108	.15	.32	98	.08
24	3.5	32	.30	.43	105	.12	.25	118	.08
25	3.2	33	.29	.33	98	.09	.23	126	.08
26	2.3	43	.27	.32	92	.08	.17	126	.06
27	2.1	45	.26	.31	101	.08	.24	139	.09
28	1.7	87	.40	1.3	66	.23	.33	171	.15
29	1.1	104	.31	.89	73	.18	.30	207	.17
30	.86	103	.24	.81	86	.19	.34	206	.19
31	.66	84	.15	.71	108	.21	---	---	---

05311000 MINNESOTA RIVER AT MONTEVIDEO, MINN.

LOCATION.--Lat 44°56'00", long 95°44'00", in NW¼NW¼ sec.19, T.117 N., R.40 W., Lac qui Parle County, at gaging station, on right bank 100 ft (30 m) upstream from bridge on U.S. Highway 212, at Montevideo, and 400 ft (122 m) downstream from Chippewa River.

DRAINAGE AREA.--6,180 mi² (16,000 km²), approximately.

PERIOD OF RECORD.--Chemical analyses: November 1961 to September 1966, October 1972 to current year.
Water temperatures: November 1961 to September 1963.

REMARKS.--Miscellaneous chemical analyses are published for water year 1972. Some spectrographic data available at district office at St. Paul, Minn.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPER-ATURE (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	INSTAN-TANEOUS DIS-CHARGE (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	VOLA-TILE FILT-RABLE RESIDUE (MG/L) (00520)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	COLOR (PLAT-INUM-COBALT UNITS) (00080)	CARBON DIOXIDE (CO2) (MG/L) (00405)
OCT. 11...	1100	18.0	12.5	30	896	653	612	--	53.8	20	3.6
NOV. 14...	1430	-1.0	.0	30	900	626	575	174	51.9	10	2.2
DEC. 20...	1100	-4.5	.0	38	989	745	694	187	76.6	20	10
JAN. 22...	1500	-2.0	.0	143	1000	740	691	180	286	10	--
FEB. 27...	1430	-.5	.0	152	1080	797	735	191	327	30	7.7
MAR. 31...	1100	-.5	.0	230	1040	759	720	184	471	10	16
MAY 06...	1000	13.0	13.0	2200	660	476	425	121	2830	25	3.7
JULY 15...	1500	31.0	26.5	966	730	526	481	141	1370	30	5.8
AUG. 15...	1230	26.5	22.5	141	731	499	467	160	190	35	6.5
SEP. 19...	0945	11.5	14.0	148	650	469	438	115	187	28	1.5

DATE	PH (UNITS) (00400)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	ALKA-LINITY AS CACO3 (MG/L) (00410)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L) (00625)
OCT. 11...	8.2	100	50	33	7.5	293	26	200	.3	--
NOV. 14...	8.4	94	49	32	3.8	287	24	180	.2	.97
DEC. 20...	7.8	110	58	38	7.2	326	29	230	.3	.89
JAN. 22...	--	94	62	36	8.3	300	18	260	.3	2.0
FEB. 27...	7.9	100	66	39	8.8	314	22	280	.3	2.3
MAR. 31...	7.6	110	67	35	7.8	323	18	260	.3	2.0
MAY 06...	8.0	77	35	14	5.7	189	10	150	.2	1.3
JULY 15...	7.9	73	45	19	7.4	237	10	160	.2	1.7
AUG. 15...	7.9	77	43	19	7.0	263	13	120	.2	.47
SEP. 19...	8.5	72	41	18	6.8	249	10	120	.2	2.0

05311000 MINNESOTA RIVER AT MONTEVIDEO, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL NITRO-GEN (N) (MG/L) (00600)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	PERCENT SODIUM (00932)	TOTAL NITRO-GEN (NO3) (MG/L) (71887)
OCT.										
11...	.38	--	.38	19	.89	460	160	.7	13	--
NOV.										
14...	.53	1.5	.34	19	.65	440	150	.7	14	6.6
DEC.										
20...	.91	1.8	.59	25	1.01	510	190	.7	14	8.0
JAN.										
22...	.55	2.6	.25	32	1.01	490	190	.7	14	11
FEB.										
27...	.52	2.8	.34	30	1.08	520	210	.7	14	12
MAR.										
31...	.36	2.4	.28	27	1.03	550	230	.7	12	10
MAY										
06...	1.2	2.5	.15	19	.65	340	150	.3	8	11
JULY										
15...	.32	2.0	.35	24	.72	370	130	.4	10	8.9
AUG.										
15...	.23	.70	.27	28	.68	370	110	.4	10	3.1
SEP.										
19...	.06	2.1	.21	20	.64	350	100	.4	10	9.1

05316770 MINNESOTA RIVER AT NEW ULM, MINN.

LOCATION.--Lat 44°19'29", long 94°27'09", in NE¼NE¼ sec.20, T.110 N., R.30 W., Nicollet County, at gaging station on left bank, 30 ft (9 m) downstream from bridge on U.S. Highway 14 at New Ulm, and 6.1 mi (9.8 km) upstream from Cottonwood River.

DRAINAGE.--9,530 mi² (24,680 km²), approximately.

PERIOD OF RECORD.--Specific conductance: October 1971 to current year.
Water temperature: October 1967 to current year.
Sediment records: October 1967 to current year.

EXTREMES.--Current year:
Specific conductance: Maximum daily observed, 1,180 micromhos Jan. 6; minimum daily observed, 621 micromhos Apr. 25, 26.
Water temperatures: Maximum, 29°C July 18, July 27 to Aug. 3; minimum, freezing point on many days during winter period.
Sediment concentrations: Maximum daily, 448 mg/l June 22; minimum daily, 25 mg/l Feb. 12.
Sediment discharge: Maximum daily, 4,270 tons (3,870 tonnes) June 22; minimum daily, 6.6 tons (6.0 tonnes) Nov. 22.

Period of record:
Specific conductance: Maximum daily observed, 1,360 micromhos Nov. 18, 1974; minimum daily observed, 420 micromhos Mar. 19, 1972.
Water temperatures: Maximum, 32°C July 8, 1974; minimum, freezing point on many days during winter period.
Sediment concentrations: Maximum daily, 776 mg/l June 6, 1971; minimum daily, 8 mg/l Feb. 15, 16, 1970.
Sediment discharge: Maximum daily, 34,200 tons (31,000 tonnes) Apr. 13, 1969; minimum daily, 4.0 tons (3.6 tonnes) Sept. 28, 1974.

REMARKS.--Flow affected by ice during winter period.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	817	940	919	---	---	---	---	807	668	739	690	824
2	793	814	983	---	---	---	---	834	668	714	690	659
3	793	891	---	---	---	---	---	712	668	714	714	769
4	817	838	---	---	---	---	---	864	668	714	769	795
5	817	838	---	---	---	---	---	834	668	714	744	795
6	817	838	---	1180	---	---	---	834	668	714	721	795
7	930	792	---	---	---	---	---	834	668	739	756	824
8	870	792	---	---	---	---	---	834	668	739	744	824
9	842	792	---	---	---	---	---	781	668	739	744	824
10	842	792	---	---	---	---	---	781	668	714	721	833
11	842	891	---	---	---	---	---	781	668	714	678	880
12	842	792	---	---	984	---	---	733	690	647	744	864
13	842	814	---	---	---	---	---	733	668	647	721	880
14	842	792	---	---	---	---	---	712	690	690	744	864
15	842	770	---	---	---	---	896	712	690	690	744	897
16	842	814	---	---	---	---	807	712	668	690	744	897
17	817	792	---	---	---	---	781	712	714	690	769	897
18	627	814	---	---	---	---	654	712	714	647	795	897
19	817	838	---	---	---	---	672	712	690	690	795	897
20	842	814	---	---	---	---	672	712	690	690	795	897
21	870	838	---	---	---	896	752	712	714	690	795	897
22	870	838	---	---	---	---	733	712	714	690	795	897
23	842	864	---	---	---	---	691	712	714	690	795	897
24	842	891	---	---	---	---	637	712	714	690	795	897
25	817	919	---	---	---	---	621	691	739	714	795	897
26	842	950	---	---	---	---	621	691	739	714	795	897
27	842	919	---	---	---	---	654	691	739	668	795	897
28	792	814	---	---	---	---	672	668	739	627	795	897
29	891	814	---	---	---	---	807	733	668	690	623	897
30	814	919	---	---	---	---	693	714	714	690	824	729
31	814	---	---	---	---	---	---	714	---	690	824	---
MONTH	830	841	---	---	---	---	---	745	692	696	757	854
YEAR	MAX	1180	MIN	621	MEAN	774						

05316770 MINNESOTA RIVER AT NEW ULM, MINN.--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12.0	12.0	0.0	---	---	---	---	10.0	22.0	28.0	29.0	24.0
2	12.0	9.0	---	---	---	---	---	12.0	21.0	28.0	29.0	24.0
3	12.0	8.0	---	---	---	---	---	12.0	22.0	28.0	29.0	25.0
4	17.0	8.0	---	---	---	---	---	13.0	22.0	28.0	27.0	24.0
5	16.0	9.0	---	---	---	---	---	15.0	22.0	28.0	26.0	24.0
6	17.0	9.0	---	0.5	---	---	---	14.0	22.0	28.0	26.0	23.0
7	19.0	9.0	---	---	---	---	---	14.0	21.0	28.0	26.5	22.0
8	17.0	8.0	---	---	---	---	---	15.0	21.0	28.0	26.0	22.0
9	15.0	8.0	---	---	---	---	---	16.0	20.0	28.0	26.0	22.0
10	16.0	8.0	---	---	---	---	---	16.0	20.0	27.0	27.0	23.0
11	18.0	7.0	---	---	---	---	---	16.0	20.0	25.0	27.0	20.0
12	18.0	4.0	---	---	0.0	---	---	20.0	20.0	22.0	27.0	20.0
13	18.0	4.0	---	---	---	---	---	20.0	20.0	24.0	27.0	20.0
14	14.0	3.0	---	---	---	---	---	21.0	20.0	23.0	25.0	20.0
15	12.0	3.0	---	---	---	---	4.0	20.0	20.0	27.0	25.0	20.0
16	12.0	4.0	---	---	---	---	4.0	21.0	21.0	27.0	26.0	20.0
17	12.0	5.0	---	---	---	---	3.0	22.0	21.0	28.0	26.0	18.0
18	12.0	5.0	---	---	---	---	3.0	22.0	22.0	29.0	24.0	18.0
19	12.0	5.0	---	---	---	---	3.0	22.0	22.0	28.0	25.0	16.0
20	12.0	3.0	---	---	---	---	3.0	21.0	24.0	28.0	25.0	14.0
21	12.0	3.0	---	---	---	0.5	5.5	21.0	24.0	28.0	25.0	14.0
22	13.0	3.0	---	---	---	---	5.0	22.0	24.0	28.0	25.0	14.0
23	15.0	3.0	---	---	---	---	5.0	22.0	24.0	28.0	26.0	14.0
24	15.0	3.0	---	---	---	---	5.0	22.0	24.0	28.0	27.0	14.0
25	14.0	2.0	---	---	---	---	6.0	22.0	24.0	28.0	26.0	15.0
26	13.0	1.0	---	---	---	---	7.0	22.0	25.0	28.0	23.0	15.0
27	13.0	1.0	---	---	---	---	7.0	22.0	26.0	29.0	23.0	16.0
28	11.0	0.0	---	---	---	---	9.0	22.0	26.0	29.0	23.0	16.0
29	11.0	0.0	---	---	---	---	10.0	19.5	27.0	29.0	23.0	16.0
30	9.0	0.0	---	---	---	---	8.5	21.0	28.0	29.0	23.0	14.0
31	9.0	---	---	---	---	---	---	22.0	---	29.0	23.0	---
MONTH	14.0	5.0	---	---	---	---	---	18.5	22.5	27.5	25.5	19.0

YEAR MAX 29.0 MIN 0.0 MEAN 17.5

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	NUMBER OF SAM- PLING POINTS	INSTAN- TANEOUS DIS- CHARGE (CFS)	BED MAT. FALL DIAM. % FINER THAN .062 MM	BED MAT. FALL DIAM. % FINER THAN .125 MM	BED MAT. FALL DIAM. % FINER THAN .250 MM	BED MAT. FALL DIAM. % FINER THAN .500 MM	BED MAT. FALL DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM
NOV. 01...	1415	8	95	1	2	6	21	39	43	51	58	100
JULY 10...	1500	4	1960	13	15	21	35	53	56	69	83	100

DATE	TIME	TEMPER- ATURE (DEG C)	INSTAN- TANEOUS DIS- CHARGE (CFS)	SUS- PENDED SEDI- MENT (MG/L)	SUS- PENDED SEDI- MENT DIS- CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .002 MM	SUS. SED. FALL DIAM. % FINER THAN .004 MM
APR. 21...	1700	6.5	3240	277	2420	39	55
30...	1240	7.5	8010	91	1970	4	76

DATE	SUS. SED. FALL DIAM. % FINER THAN .008 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	SUS. SED. FALL DIAM. % FINER THAN .125 MM	SUS. SED. FALL DIAM. % FINER THAN .250 MM	SUS. SED. FALL DIAM. % FINER THAN .500 MM
APR. 21...	67	76	92	95	96	100
30...	78	89	--	--	--	--

05316770 MINNESOTA RIVER AT NEW ULM, MINN.--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER			NOVEMBER			DECEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	54	41	6.0	92	110	27	91	90	22
2	60	46	7.5	87	107	25	89	97	23
3	63	50	8.5	84	106	24	89	96	23
4	67	73	13	84	101	23	89	95	23
5	67	90	16	84	94	21	89	94	23
6	67	79	14	86	91	21	102	93	26
7	66	56	10	87	79	19	153	92	38
8	68	94	17	89	83	20	200	91	49
9	68	110	20	90	99	24	218	90	53
10	70	118	22	93	120	30	197	89	47
11	80	227	49	93	113	28	155	88	37
12	76	109	22	91	110	27	134	88	32
13	76	68	14	91	105	26	132	87	31
14	75	92	19	90	100	24	132	86	31
15	73	106	21	89	76	18	131	85	30
16	74	106	21	91	81	20	119	85	27
17	74	113	23	91	59	14	107	84	24
18	75	105	21	91	40	9.8	103	84	23
19	75	100	20	91	78	19	101	83	23
20	76	98	20	94	70	18	98	82	22
21	79	65	14	94	33	8.4	97	81	21
22	80	66	14	94	26	6.6	95	80	21
23	79	86	18	93	44	11	95	80	21
24	79	90	19	92	64	16	93	79	20
25	79	82	17	90	96	23	92	78	19
26	79	89	19	91	125	31	92	77	19
27	79	61	13	89	120	29	92	76	19
28	82	100	22	88	102	24	91	75	18
29	86	133	31	90	91	22	91	74	18
30	89	91	22	91	86	21	90	73	18
31	89	72	17	---	---	---	89	72	17

	JANUARY			FEBRUARY			MARCH		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	87	70	16	187	31	16	253	36	25
2	86	68	16	203	31	17	247	36	24
3	85	66	15	206	30	17	237	37	24
4	84	64	15	209	30	17	229	38	23
5	84	62	14	211	30	17	223	39	23
6	83	59	13	214	30	17	214	40	23
7	83	58	13	216	30	17	203	41	22
8	83	56	13	217	29	17	187	42	21
9	83	55	12	225	29	18	176	43	20
10	83	53	12	237	28	18	174	45	21
11	82	52	12	246	27	18	174	46	22
12	82	50	11	258	25	17	174	48	23
13	82	48	11	254	26	18	157	49	21
14	82	47	10	259	26	18	157	50	21
15	82	45	10	265	27	19	171	51	24
16	82	44	9.7	265	27	19	173	52	24
17	82	43	9.5	265	28	20	175	53	25
18	82	42	9.3	267	28	20	176	53	25
19	82	41	9.1	262	29	21	180	54	26
20	82	40	8.9	265	29	21	183	55	27
21	83	39	8.7	267	30	22	187	55	28
22	84	38	8.6	266	30	22	210	58	33
23	100	37	10	261	31	22	256	61	42
24	112	35	11	260	32	22	269	64	46
25	121	34	11	260	33	23	254	67	46
26	130	33	12	257	33	23	236	70	45
27	140	33	12	260	34	24	216	73	43
28	147	32	13	260	35	25	191	77	40
29	156	31	13	---	---	---	183	80	40
30	166	31	14	---	---	---	173	83	39
31	176	31	15	---	---	---	168	87	39

05316770 MINNESOTA RIVER AT NEW ULM, MINN.--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL			MAY			JUNE		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	164	90	40	8040	86	1870	2420	108	706
2	171	93	43	7720	85	1770	2440	91	600
3	185	97	48	7210	84	1640	2340	143	903
4	200	100	54	6660	85	1530	2250	147	893
5	207	104	58	6140	88	1460	2150	149	865
6	208	107	60	5690	101	1550	2120	155	887
7	217	110	64	5270	126	1790	2100	153	868
8	226	114	70	4870	125	1640	2070	150	838
9	224	118	71	4470	133	1610	2010	154	836
10	232	122	76	4140	148	1650	1930	150	782
11	244	126	83	3910	125	1320	1820	147	722
12	262	130	92	3780	95	970	1800	192	933
13	309	135	113	3670	134	1330	1870	178	899
14	480	140	181	3590	154	1490	2020	151	824
15	842	143	325	3510	153	1450	2180	182	1070
16	1380	129	481	3420	187	1730	2300	175	1090
17	1830	90	445	3320	69	619	2440	167	1100
18	2540	145	994	3250	85	746	2500	176	1190
19	3060	156	1290	3150	160	1360	2490	187	1260
20	3280	204	1810	3080	226	1880	2420	199	1300
21	3260	243	2140	3000	78	632	2710	395	2890
22	3370	111	1010	2930	102	807	3530	448	4270
23	3900	340	3580	2910	155	1220	4000	315	3400
24	4760	311	4000	2950	161	1280	4130	241	2690
25	5590	241	3640	2920	78	615	4110	220	2440
26	5970	236	3800	2870	145	1120	4000	220	2380
27	6160	213	3540	2830	184	1410	3800	205	2100
28	6810	170	3130	2760	114	850	3580	213	2060
29	7610	108	2220	2680	143	1030	3450	239	2230
30	8080	92	2010	2550	155	1070	3320	277	2480
31	---	---	---	2450	147	972	---	---	---

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	3030	324	2650	569	132	203	232	113	71
2	2790	387	2920	513	92	127	235	105	67
3	2620	376	2660	496	82	110	222	100	60
4	2510	327	2220	459	86	107	216	97	57
5	2410	289	1880	421	92	105	208	96	54
6	2300	284	1760	398	96	103	202	96	52
7	2220	346	2070	384	98	102	195	98	52
8	2140	441	2550	370	100	100	194	100	52
9	2060	424	2360	355	136	130	192	101	52
10	1970	301	1600	346	152	142	200	102	55
11	1900	211	1080	340	146	134	238	93	60
12	1840	204	1010	340	138	127	226	80	49
13	1740	234	1100	296	124	99	220	74	46
14	1580	310	1320	233	108	68	228	74	46
15	1520	370	1520	208	97	54	228	75	46
16	1490	277	1110	203	94	52	223	78	47
17	1410	228	868	198	93	50	215	85	49
18	1280	176	608	198	94	50	232	88	55
19	1150	166	515	205	96	53	231	82	51
20	1020	219	603	208	98	55	236	77	49
21	901	248	603	206	97	54	244	72	47
22	828	288	644	211	94	54	247	69	46
23	783	225	476	214	95	55	252	73	50
24	758	162	332	214	97	56	232	85	53
25	750	145	294	211	101	58	206	91	51
26	732	155	306	207	104	58	202	85	46
27	694	188	352	208	102	57	202	75	41
28	679	224	411	263	110	78	203	72	39
29	659	230	409	294	155	123	203	78	43
30	631	205	349	229	139	86	195	75	39
31	607	170	279	219	124	73	---	---	---

05325000 MINNESOTA RIVER AT MANKATO, MINN.

LOCATION.--Lat 44°09'54", long 94°00'45", in NE¼NE¼ sec.13, T.108 N., R.27 W., Blue Earth County, 0.2 mi (0.3 km) upstream from gaging station on right bank at bridge on U.S. Highway 169 at Mankato, 1.1 mi (1.8 km) downstream from Blue Earth River, and at mile 107.1 (172.3 km) upstream from Mississippi River.

DRAINAGE AREA.--14,900 mi² (38,600 km²), approximately.

PERIOD OF RECORD.--Chemical analyses: October 1963 to August 1966.
Specific conductance: October 1971 to current year.
Water temperatures: October 1967 to current year.
Sediment records: October 1967 to current year.

EXTREMES.--Current year:
Specific conductance: Maximum daily observed, 1,010 micromhos Mar. 3; minimum daily observed, 532 micromhos Apr. 13.
Water temperatures: Maximum, 29.5°C July 27; minimum, freezing point on many days during winter period.
Sediment concentrations: Maximum daily, 890 mg/l Apr. 28; minimum daily, 13 mg/l Nov. 24.
Sediment loads: Maximum daily, 44,900 tons (40,700 tonnes) Apr. 28; minimum daily, 9.5 tons (8.6 tonnes) Nov. 24.

Period of record:
Specific conductance: Maximum daily observed, 1,010 micromhos Mar. 3, 1975; minimum daily observed, 420 micromhos March 17, 1972.
Water temperatures: Maximum, 30°C Aug. 19, 1972; minimum, freezing point on many days during winter period.
Sediment concentrations: Maximum daily, 2,850 mg/l Aug. 7, 1968: minimum daily, 13 mg/l Nov. 24, 1974.
Sediment loads: Maximum daily, 247,000 tons (224,100 tonnes) Apr. 9, 1969; minimum daily, 9.5 tons (8.6 tonnes) Nov. 24, 1974.

REMARKS.--Flow affected by ice during winter period.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	TEMPER-ATURE (DEG C)	INSTAN-TANEOUS DIS-CHARGE (CFS)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .002 MM	SUS. SED. FALL DIAM. % FINER THAN .004 MM
APR. 16...	1330	6.0	10500	402	11400	30	35
MAY 02...	1145	9.5	22800	261	16100	68	69

DATE	SUS. SED. FALL DIAM. % FINER THAN .008 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	SUS. SED. FALL DIAM. % FINER THAN .125 MM	SUS. SED. FALL DIAM. % FINER THAN .250 MM	SUS. SED. FALL DIAM. % FINER THAN .500 MM
APR. 16...	46	52	70	84	98	100
MAY 02...	71	77	96	--	--	--

DATE	TIME	NUMBER OF SAM-PLING POINTS	INSTAN-TANEOUS DIS-CHARGE (CFS)	BED MAT. FALL DIAM. % FINER THAN .062 MM	BED MAT. FALL DIAM. % FINER THAN .125 MM	BED MAT. FALL DIAM. % FINER THAN .250 MM	BED MAT. FALL DIAM. % FINER THAN .500 MM	BED MAT. FALL DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM
OCT. 31...	1600	4	269	--	0	5	24	50	52	58
JULY 09...	1130	5	4920	0	2	17	54	87	91	100

DATE	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM
OCT. 31..	63	67	100
JULY 09...	--	--	--

05325000 MINNESOTA RIVER AT MANKATO, MINN.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	729	792	838	949	---	---	637	672	---	668	668	659
2	719	792	866	979	---	---	654	704	---	714	668	678
3	729	792	888	989	---	1010	672	733	690	668	668	721
4	749	803	893	979	---	---	672	781	690	664	667	744
5	749	814	893	949	---	---	672	781	668	668	646	744
6	719	826	893	949	---	---	691	791	667	668	699	744
7	749	814	893	949	---	---	621	781	667	668	721	744
8	770	792	---	921	---	968	590	781	667	668	699	744
9	749	814	---	896	---	---	563	781	667	656	721	769
10	739	814	---	896	968	---	538	781	667	668	721	756
11	709	814	---	---	---	---	550	781	667	668	721	718
12	739	803	920	---	---	931	538	781	667	690	744	718
13	749	792	949	---	---	---	532	723	667	690	721	614
14	729	803	949	---	911	---	550	756	667	690	721	657
15	719	826	949	---	931	896	556	756	609	690	699	657
16	739	838	949	---	---	---	593	756	609	690	721	657
17	749	864	949	---	---	---	598	756	627	690	721	657
18	749	826	949	---	---	896	644	756	627	668	744	718
19	749	826	949	---	---	---	654	---	667	690	744	718
20	749	826	949	---	---	896	654	756	667	690	744	718
21	749	838	949	---	968	807	654	733	667	690	744	718
22	770	814	920	---	---	---	691	654	668	690	721	740
23	793	826	949	---	---	712	691	705	668	690	721	740
24	770	814	920	---	---	---	682	712	668	668	721	740
25	739	838	920	---	---	590	646	712	668	668	721	729
26	759	792	949	---	---	---	654	712	690	668	744	729
27	770	838	920	---	---	576	672	712	690	668	744	729
28	781	851	989	968	---	---	646	696	739	668	744	729
29	781	851	949	---	---	605	637	---	739	668	744	729
30	793	851	949	---	---	---	646	---	668	668	744	729
31	719	---	949	---	---	---	---	---	---	668	744	---
MONTH	769	819	926	---	---	---	627	742	660	677	717	715

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12.0	15.0	1.0	0.0	---	---	1.0	9.5	18.0	25.0	26.0	24.5
2	12.0	12.0	0.0	0.5	---	---	2.0	10.0	18.0	25.5	29.0	24.5
3	9.0	7.0	0.0	0.0	---	0.0	2.5	11.0	18.0	26.0	28.0	22.0
4	15.0	6.0	2.0	1.0	---	---	2.0	12.5	18.0	27.0	26.5	22.0
5	12.0	5.5	2.0	1.0	---	---	2.5	14.0	21.0	26.5	26.0	22.0
6	12.0	6.5	0.5	0.0	---	---	1.0	15.0	20.0	26.5	21.0	21.0
7	11.0	9.5	1.0	0.0	---	---	3.0	14.0	21.0	26.0	21.0	21.0
8	12.5	10.0	1.0	1.0	---	0.0	0.5	13.0	19.0	26.0	21.0	20.0
9	14.0	8.0	1.0	0.5	---	---	1.0	12.0	16.5	23.5	26.5	20.0
10	15.0	8.0	1.0	0.0	0.0	---	3.0	13.0	19.0	23.0	28.0	21.0
11	19.0	6.0	1.0	---	---	---	0.5	15.0	16.5	21.0	24.5	18.0
12	16.0	3.0	1.0	---	---	0.0	3.0	13.5	19.0	21.5	26.5	16.0
13	13.0	2.0	1.0	---	---	---	2.0	16.0	20.0	21.0	21.0	18.0
14	10.5	0.5	1.0	---	1.0	---	3.0	16.0	18.0	20.0	24.5	19.0
15	11.0	1.0	1.0	---	0.0	2.0	4.0	14.0	19.0	22.0	22.0	18.0
16	14.0	2.0	1.0	---	---	---	4.5	15.5	19.0	25.0	26.5	16.0
17	11.0	4.0	1.0	---	---	---	5.0	16.0	20.0	25.0	21.0	19.0
18	13.5	3.0	0.5	---	---	3.0	4.5	18.0	18.0	20.0	20.0	18.0
19	13.0	5.0	0.5	---	---	---	4.0	---	20.0	25.0	22.0	14.0
20	11.0	3.0	0.5	---	---	1.5	4.0	20.0	24.0	28.0	21.0	12.0
21	11.0	2.0	0.5	---	0.5	2.5	4.0	21.0	23.0	29.0	25.5	12.0
22	13.0	6.0	1.0	---	---	---	6.5	21.0	23.0	26.5	23.5	10.0
23	13.0	3.0	1.0	---	---	0.0	7.5	24.0	23.0	25.5	22.0	11.0
24	16.5	1.5	0.0	---	---	---	7.0	21.0	24.0	26.5	29.0	10.0
25	12.0	0.0	0.0	---	---	2.0	7.5	21.0	23.5	23.5	24.5	10.0
26	10.5	0.0	0.0	---	---	---	7.0	21.0	25.0	29.0	19.0	11.0
27	14.0	0.0	1.0	---	---	0.0	8.0	21.0	23.5	29.5	18.0	12.0
28	13.5	0.0	1.5	0.0	---	---	9.5	22.5	25.0	26.5	22.0	13.0
29	14.0	0.0	1.0	---	---	2.0	10.0	19.0	26.0	26.5	23.5	10.0
30	14.0	0.0	1.5	---	---	---	9.5	19.0	24.0	26.5	22.0	9.0
31	15.0	---	0.5	---	---	---	---	17.0	---	28.0	24.5	---
MONTH	13.0	4.5	1.0	---	---	---	4.5	16.5	20.5	25.0	23.5	16.5

YEAR	MAX	29.5	MIN	0.0	MEAN	12.5

05325000 MINNESOTA RIVER AT MANKATO, MINN.--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER			NOVEMBER			DECEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	177	63	30	339	92	84	225	31	19
2	170	56	26	328	68	60	225	31	19
3	159	91	39	311	48	40	230	27	17
4	156	87	37	295	33	26	220	48	29
5	159	65	28	295	59	47	223	62	37
6	180	60	29	290	66	52	198	69	37
7	180	60	29	290	42	33	206	71	39
8	173	70	33	290	46	36	295	68	54
9	173	105	49	290	52	41	336	67	61
10	184	104	52	306	45	37	357	66	64
11	264	94	67	311	40	34	336	67	61
12	279	102	77	311	36	30	292	67	53
13	260	73	51	311	32	27	270	72	52
14	255	54	37	306	32	26	270	78	57
15	250	75	51	232	39	24	270	75	55
16	246	95	63	240	31	20	270	62	45
17	223	85	51	250	21	14	265	55	39
18	215	75	44	260	19	13	250	60	40
19	210	65	37	270	19	14	245	65	43
20	210	60	34	275	18	13	240	70	45
21	210	65	37	280	16	12	235	68	43
22	206	80	44	280	16	12	230	57	35
23	202	85	46	275	16	12	230	48	30
24	202	82	45	270	13	9.5	230	52	32
25	206	72	40	223	16	9.6	230	70	43
26	206	49	27	147	32	13	225	81	49
27	210	53	30	180	40	19	220	72	43
28	215	74	43	230	27	17	200	52	28
29	246	78	52	245	28	19	190	39	20
30	279	78	59	240	18	12	185	39	19
31	284	108	83	---	---	---	175	42	20

	JANUARY			FEBRUARY			MARCH		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	172	48	22	280	58	44	310	23	19
2	180	53	26	285	55	42	303	20	16
3	180	53	26	290	53	41	300	18	15
4	180	51	25	295	50	40	294	18	14
5	175	51	24	300	49	40	288	19	15
6	165	50	22	305	47	39	280	24	18
7	155	48	20	310	45	38	275	30	22
8	145	48	19	315	43	37	265	35	25
9	138	57	21	320	41	35	255	38	26
10	145	57	22	325	38	33	245	40	26
11	155	54	23	328	35	31	235	39	25
12	165	55	25	330	35	31	230	38	24
13	175	56	26	333	36	32	227	45	28
14	180	57	28	336	29	26	220	60	36
15	180	58	28	336	27	24	205	74	41
16	183	59	29	336	25	23	200	80	43
17	183	60	30	333	26	23	205	75	42
18	183	61	30	333	30	27	245	58	38
19	183	62	31	332	35	31	300	42	34
20	185	63	31	331	42	38	389	35	37
21	188	64	32	330	45	40	580	50	78
22	190	65	33	328	46	41	770	60	125
23	195	66	35	326	41	36	1000	60	162
24	205	67	37	323	38	33	1250	143	483
25	215	68	39	323	35	31	1540	471	1960
26	225	69	42	320	32	28	1730	502	2340
27	240	70	45	317	29	25	1900	265	1360
28	250	69	47	319	26	22	2000	240	1300
29	255	67	46	---	---	---	2150	374	2170
30	265	65	47	---	---	---	2250	285	1730
31	270	62	45	---	---	---	2330	156	981

05325000 MINNESOTA RIVER AT MANKATO, MINN.--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL			MAY			JUNE		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	2420	117	764	24000	297	19200	5900	360	5730
2	2550	143	985	23000	237	14700	5990	298	4820
3	2620	179	1270	20300	174	9540	5750	257	3990
4	2660	172	1240	18300	171	8450	5510	244	3630
5	2820	144	1100	16300	176	7750	5740	244	3780
6	3160	263	2240	14500	175	6850	6490	285	4990
7	3900	512	5390	13000	208	7300	6930	413	7730
8	4810	493	6400	11800	211	6720	7120	462	8880
9	5550	438	6560	10600	220	6300	7000	360	6800
10	5980	455	7350	9630	245	6370	6350	344	5900
11	6890	850	15800	8890	245	5880	5920	369	5900
12	7750	740	15500	8420	296	6730	6630	309	5530
13	9220	818	20400	8180	217	4790	7220	325	6340
14	9400	670	17000	8160	207	4560	7800	313	6590
15	10000	640	17300	7940	203	4350	9790	582	15400
16	10900	645	19000	7460	201	4050	10500	414	11700
17	11900	450	14500	6990	206	3890	10600	321	9190
18	12400	420	14100	6600	218	3880	11000	482	14300
19	13000	481	16900	6260	238	4020	11100	453	13600
20	13300	469	16800	5980	253	4080	10700	375	10800
21	13100	384	13600	5850	214	3380	10700	627	18100
22	12400	354	11900	5380	223	3240	11500	407	12600
23	12200	385	12700	5070	291	3980	11800	355	11300
24	13000	444	15600	5080	327	4490	11600	346	10800
25	14100	530	20200	5160	335	4670	10700	340	9820
26	14900	410	16500	5300	327	4680	9840	337	8950
27	15300	432	17800	5290	279	3980	8990	334	8110
28	18700	890	44900	5320	214	3070	8290	316	7070
29	21600	583	34000	5420	226	3310	7860	313	6640
30	23400	421	26600	5270	299	4250	8770	442	10500
31	---	---	---	5440	367	5390	---	---	---

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	7720	414	8630	1040	183	514	404	58	63
2	7070	373	7120	996	225	605	396	67	72
3	6550	334	5910	887	156	374	396	70	75
4	6200	294	4920	825	148	330	369	70	70
5	6180	383	6390	783	160	338	363	67	66
6	5960	342	5500	725	151	296	345	67	62
7	5550	303	4540	681	147	270	339	75	69
8	5220	293	4130	649	152	266	328	72	64
9	4890	297	3920	618	151	252	328	73	65
10	4660	308	3880	608	142	233	306	75	62
11	4380	287	3390	559	129	195	349	83	78
12	4080	259	2850	523	112	158	368	84	83
13	3800	235	2410	531	98	141	326	81	71
14	3500	223	2110	457	89	110	331	75	67
15	3200	222	1920	396	94	101	331	65	58
16	3010	213	1730	389	110	116	342	57	53
17	2840	203	1560	351	126	119	326	57	50
18	2620	202	1430	345	133	124	315	67	57
19	2390	298	1920	369	124	124	315	70	60
20	2170	276	1620	389	123	129	331	60	54
21	1940	235	1230	382	117	121	342	48	44
22	1730	207	967	382	104	107	355	46	44
23	1590	195	837	396	94	101	362	52	51
24	1510	194	791	411	91	101	331	53	47
25	1450	203	795	419	87	98	326	53	47
26	1370	204	755	419	83	94	315	51	43
27	1300	185	649	396	88	94	299	49	40
28	1200	172	557	404	98	107	362	50	49
29	1130	176	537	481	98	127	337	52	47
30	1100	175	520	549	75	111	337	55	50
31	1040	169	475	426	61	70	---	---	---

05330000 MINNESOTA RIVER NEAR JORDAN, MINN.

LOCATION.--Lat 44°41'35", long 93°38'30", in NW¼SW¼ sec.7, T.114 N., R.23 W., Carver County, at gaging station 1.5 mi (2.4 km) northwest of Jordan, and at mile 39.4 (63.4 km) upstream from Mississippi River.

DRAINAGE AREA.--16,200 sq mi, approximately.

PERIOD OF RECORD.--Chemical analyses: December 1962 to August 1966, water year 1967 (partial-record station), November 1967 to July 1969, October 1971 to current year.

REMARKS.--BOD and bacteria data furnished by Metropolitan Waste Control Commission, St. Paul, Minn.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPER-ATURE (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	INSTAN-TANEOUS DIS-CHARGE (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	SUS-PENDED SOLIDS (MG/L) (70299)	TUR-BID-ITY (JTU) (00070)	COLOR (PLAT-INUM-COBALT UNITS) (00080)	DIS-SOLVED OXYGEN (MG/L) (00300)
OCT., 03...	1100	12,5	10,0	285	840	531	536	409	33	20	10	11,0
NOV., 14...	1201	--	3,0	411	820	595	560	660	11	6	8	12,5
DEC., 16...	1300	-3,0	,0	545	1000	743	728	1090	17	4	5	15,6
JAN., 16...	1310	-11,0	,0	259	999	686	670	480	1	3	20	7,3
FEB., 12...	1200	-11,0	1,0	399	1100	782	733	842	5	2	20	9,8
MAR., 12...	1315	-8,0	,5	411	1060	715	681	793	2	2	20	8,8
APR., 15...	1100	10,5	1,5	9830	500	324	319	8600	656	170	25	12,8
MAY 22...	1115	--	22,0	6600	724	492	463	8770	300	45	15	7,3
JUNE 23...	1100	26,0	23,0	14100	630	435	395	16600	416	74	30	6,8
JULY 21...	1045	29,5	26,0	2620	770	487	463	3450	528	70	30	7,8
AUG., 13...	1330	24,0	26,0	805	800	510	497	1110	52	22	15	7,7
SEP., 25...	1130	13,5	12,5	471	828	520	527	661	40	15	5	11,7
TIME WTD, AVG,	--	--	--	--	839	568	548	--	172	--	--	9,9

DATE	CARBON DIOXIDE (CO2) (MG/L) (00405)	PH (UNITS) (00400)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	ALKA-LINITY AS CACO3 (MG/L) (00410)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	DIS-SOLVED AMMONIA NITRO-GEN (N) (MG/L) (00608)	AMMONIA NITRO-GEN (N) (MG/L) (00610)
OCT., 03...	2,8	8,3	84	44	45	5,2	286	45	130	,3	,03	,04
NOV., 14...	3,8	8,2	99	38	46	3,8	310	39	130	,2	,28	,28
DEC., 16...	3,3	8,3	120	54	51	6,1	333	43	220	,1	,34	,34
JAN., 16...	11	7,8	120	46	54	5,5	354	53	160	,2	1,0	1,0
FEB., 12...	8,8	7,9	120	54	56	6,3	358	49	200	,3	1,1	1,1
MAR., 12...	10	7,8	110	54	51	5,4	335	42	190	,3	,70	,70
APR., 15...	3,8	7,9	58	22	9,3	3,9	153	18	54	,2	,36	,39
MAY 22...	8,0	7,7	85	38	17	5,1	207	22	140	,3	,00	,04
JUNE 23...	2,3	8,2	80	27	10	3,6	185	19	69	,3	,04	,04
JULY 21...	1,2	8,6	84	39	20	6,9	252	22	110	,3	,00	,00
AUG., 13...	2,1	8,4	83	38	29	6,0	272	28	130	,3	,00	,00
SEP., 25...	1,1	8,7	86	41	38	5,9	275	35	140	,2	,00	,00
TIME WTD, AVG,	4,9	8,2	94	41	36	5,1	277	35	139	,3	,32	,33

05330000 MINNESOTA RIVER NEAR JORDAN, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TOTAL ORGANIC NITROGEN (N) (MG/L) (00605)	TOTAL KJELDAHL NITROGEN (N) (MG/L) (00625)	DISSOLVED NITRITE (N) (MG/L) (00613)	DISSOLVED NITRATE (N) (MG/L) (00618)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL NITROGEN (N) (MG/L) (00600)	DISSOLVED PHOSPHORUS (P) (MG/L) (00666)	TOTAL PHOSPHORUS (P) (MG/L) (00665)	DISSOLVED SILICA (SIO2) (MG/L) (00955)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L) (00310)	PHENOLS (UG/L) (32730)	FECAL COLIFORM (COL. PER 100 ML) (31616)
OCT. 03...	1.1	1.1	.07	.01	.08	1.2	.05	.27	10	8.4	6	30
NOV. 14...	.37	.65	.03	.41	.44	1.1	.12	.14	15	2.6	1	12
DEC. 16...	.96	1.3	.01	.47	1.1	2.4	.03	.23	31	--	0	12
JAN. 16...	.20	1.2	.02	.83	1.0	2.2	.12	.17	14	1.2	6	48
FEB. 12...	.30	1.4	.01	1.2	1.2	2.6	.22	.26	25	.5	0	8
MAR. 12...	.40	1.1	.01	.99	1.0	2.1	.24	.30	22	1.4	3	50
APR. 15...	1.5	1.9	.07	9.7	9.8	12	.17	--	17	6.6	3	300
MAY 22...	1.7	1.7	.02	4.3	4.3	6.0	.06	.29	12	4.6	5	70
JUNE 23...	2.3	2.3	.07	12	12	14	.19	.32	22	3.4	2	1020
JULY 21...	2.2	2.2	.02	2.0	2.2	4.4	.13	.51	23	4.0	7	376
AUG. 13...	.16	.16	.00	.00	.01	.17	.01	.14	19	4.6	5	30
SEP. 25...	1.6	1.6	.00	.01	.01	1.6	.03	.21	19	6.6	1	80
TIME WTD. AVG.	1.1	1.4	.03	2.7	2.8	4.1	.11	.26	19	4.0	3	--

DATE	STREPTOCOCCI (COLONIES PER 100 ML) (31679)	DISSOLVED SOLIDS (TONS PER AC-FT) (70303)	PERCENT SATURATION (00301)	HARDNESS (CA,MG) (MG/L) (00900)	NONCARBONATE HARDNESS (MG/L) (00902)	SODIUM ADSORPTION RATIO (00931)	PERCENT SODIUM (00932)	DIS SOLVED AMMONIA (NH4) (MG/L) (71846)	DIS SOLVED NITRATE (NO3) (MG/L) (71851)	DIS SOLVED NITRITE (NO2) (MG/L) (71856)	TOTAL NITROGEN (NO3) (MG/L) (71887)
OCT. 03...	8	.72	100	390	110	1.0	20	.04	.04	.23	5.2
NOV. 14...	16	.81	65	400	94	1.0	20	.36	1.9	.10	4.8
DEC. 16...	100	1.01	110	520	190	1.0	17	.44	2.1	.03	11
JAN. 16...	180	.93	51	490	140	1.1	19	1.3	3.7	.07	9.7
FEB. 12...	0	1.06	70	520	160	1.1	19	1.4	5.3	.03	12
MAR. 12...	130	.97	63	500	160	1.0	18	.90	4.4	.03	9.3
APR. 15...	360	.44	94	240	82	.3	8	.46	43	.23	52
MAY 22...	40	.67	84	370	160	.4	9	.00	19	.07	27
JUNE 23...	664	.59	79	310	130	.2	6	.05	53	.26	63
JULY 21...	160	.66	98	370	120	.5	10	.00	8.8	.07	19
AUG. 13...	12	.69	96	360	91	.7	15	.00	.00	.03	.75
SEP. 25...	4	.71	112	380	110	.8	17	.00	.04	.00	7.1
TIME WTD. AVG.	--	.77	85	404	129	.8	15	.41	12	.10	18

05330000 MINNESOTA RIVER NEAR JORDAN, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	TEMPER-ATURE (DEG C)	INSTAN-TANEOUS DIS-CHARGE (CFS)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .002 MM	SUS. SED. FALL DIAM. % FINER THAN .004 MM
APR. 15...	1230	1.5	9830	799	21200	28	40
MAY 22...	1115	22.0	6600	220	3920	36	46
SEP. 25...	1130	12.5	471	71	90	--	--

DATE	SUS. SED. FALL DIAM. % FINER THAN .008 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	SUS. SED. FALL DIAM. % FINER THAN .125 MM	SUS. SED. FALL DIAM. % FINER THAN .250 MM	SUS. SED. FALL DIAM. % FINER THAN .500 MM	METHOD OF ANALY-SIS
APR. 15...	48	61	84	94	100	--	VPWC
MAY 22...	48	58	76	95	99	100	VPWC
SEP. 25...	--	--	86	--	--	--	S

DATE	TIME	TEMPER-ATURE (DEG C)	INSTAN-TANEOUS DIS-CHARGE (CFS)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .062 MM
OCT. 03...	1100	10.0	285	55	42	--
NOV. 14...	1201	3.0	411	38	42	--
DEC. 16...	1230	.0	522	60	85	--
JAN. 16...	1310	.0	259	132	92	--
MAR. 12...	1315	.5	411	34	38	--
APR. 15...	1230	1.5	9830	799	21200	84
MAY 22...	1115	22.0	6600	220	3920	76
JUNE 23...	1100	23.0	14100	445	16900	--
JULY 21...	1045	26.0	2620	309	2190	--
AUG. 13...	1300	26.0	804	84	182	--
SEP. 25...	1130	12.5	471	71	90	86

DATE	TIME	DIS-SOLVED GROSS ALPHA AS U-NAT. (UG/L) (80030)	SUS-PENDED GROSS ALPHA AS U-NAT. (UG/L) (80040)	DIS-SOLVED GROSS BETA AS CS-137 (PC/L) (03515)	SUS-PENDED GROSS BETA AS CS-137 (PC/L) (03516)	DIS-SOLVED GROSS BETA AS SR90 /Y90 (PC/L) (80050)	SUS-PENDED GROSS BETA AS SR90 /Y90 (PC/L) (80060)	DIS-SOLVED RA-226 (RADON METHOD) (PC/L) (09511)	DIS-SOLVED NATURAL URANIUM (U) (UG/L) (22703)	TOTAL FILT-RABLE RESIDUE (MG/L) (00515)	TOTAL NON-FILT-RABLE RESIDUE (MG/L) (00530)
OCT. 03...	1100	<8.6	3.4	10	3.3	8.2	2.9	.08	2.6	630	26
SEP. 25...	1130	15	1.4	9.3	1.7	7.6	1.4	.07	2.7	540	19

05330000 MINNESOTA RIVER NEAR JORDAN, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	DIS-SOLVED ALUM-INUM (AL) (UG/L) (01106)	SUS-PENDED ALUM-INUM (AL) (UG/L) (01107)	TOTAL ALUM-INUM (AL) (UG/L) (01105)	DIS-SOLVED ARSENIC (AS) (UG/L) (01000)	SUS-PENDED ARSENIC (AS) (UG/L) (01001)	TOTAL ARSENIC (AS) (UG/L) (01002)	TOTAL BARIUM (BA) (UG/L) (01007)	TOTAL BERYL-LIUM (BE) (UG/L) (01012)	DIS-SOLVED BORON (B) (UG/L) (01020)
OCT. 03...	1100	0	600	600	3	0	3	<100	<10	150
MAR. 12...	1315	--	--	--	4	0	4	--	--	--
JUNE 23...	1100	--	--	--	2	4	6	--	--	--
AUG. 13...	1330	--	--	--	4	2	6	--	--	--
SEP. 25...	1130	0	250	250	--	--	6	<100	<10	120

OCT. 3, 1974
1100 HOURS

IDENTIFICATION OF PHYTOPLANKTON

180,000 CELLS/ML

	_ORGANISM__NAME	_COMMON__NAME	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...HYDRODICTYACEAE			
	....PEDIASTRUM		2,500	1
	...OOCYSTACEAE			
	....ANKISTRODESMUS		2,500	1
L	....QUADRIGULA			0
	....SELENASTRUM		1,400	1
	...SCENEDESMACEAE			
	....ACTINASTRUM		3,100	2
	....CRUCIGENIA		3,700	2
	....SCENEDESMUS		15,000	8
	..VOLVOCALES			
	...CHLAMYDOMONADACEAE			
	....CHLAMYDOMONAS		2,800	2
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
D	....CYCLOTELLA		47,000	26
	....MELOSIRA		5,200	3
	..PENNALES	PENNATE		
	...FRAGILARIACEAE			
	....SYNEDRA		6,000	3
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..CHROOCOCCALES	COCCOID		
	...CHROOCOCCACEAE			
	....AGMENELLUM		7,100	4
	....ANACYSTIS		4,100	2
	....GOMPHOSPHAERIA		12,000	7
	..OSCILLATORIALES	FILAMENTOUS		
	...OSCILLATORIACEAE			
D	....LYNGBYA		70,000	38
	EUGLENOPHYTA	EUGLENOIDS		
	.EUGLENOPHYCEAE			
	..EUGLENALES			
	...EUGLENACEAE			
L	....EUGLENA			0

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
L - LESS THEN 1%: MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 1.481
CLASS 1.481
ORDER 2.120
FAMILY 2.280
GENERA 2.776

05330000 MINNESOTA RIVER NEAR JORDAN, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	DIS-SOLVED SELE-NIUM (SE) (UG/L) (01145)	SUS-PENDED SELE-NIUM (SE) (UG/L) (01146)	TOTAL SELE-NIUM (SE) (UG/L) (01147)	DIS-SOLVED STRON-TIUM (SR) (UG/L) (01080)	SUS-PENDED STRON-TIUM (SR) (UG/L) (01081)	TOTAL STRON-TIUM (SR) (UG/L) (01082)	DIS-SOLVED ZINC (ZN) (UG/L) (01090)	SUS-PENDED ZINC (ZN) (UG/L) (01091)	TOTAL ZINC (ZN) (UG/L) (01092)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)
OCT. 03...	0	0	0	380	0	380	20	0	20	--
MAR. 12...	0	1	1	--	--	--	6	10	20	7.3
JUNE 23...	3	0	3	--	--	--	0	70	70	19
AUG. 13...	1	0	1	--	--	--	10	20	30	13
SEP. 25...	--	--	0	360	0	360	10	0	10	--

NOV. 14. 1974
1201 HOURS

IDENTIFICATION OF PHYTOPLANKTON

28.000 CELLS/ML

	_ORGANISM__NAME_______________	_COMMON__NAME_______	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
	....ANKISTRODESMUS		1.000	4
L	....CHODATELLA			0
	....DICTYOSPHAERIUM		1.700	6
	....KIRCHNERIELLA		1.300	5
	...SCENEDESMACEAE			
	....ACTINASTRUM		2.200	8
	....CRUCIGENIA		930	3
	....SCENEDESMUS		2.800	10
	....TETRASTRUM		1.600	6
	..VOLVOCALES			
	...CHLAMYDOMONADACEAE			
	....CHLAMYDOMONAS		310	1
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
D	....CYCLOTELLA		7.400	27
	....MELOSIRA		1.200	5
	..PENNALES	PENNATE		
	...NAVICULACEAE	NAVICULOID		
L	....NAVICULA			0
	...NITZSCHIACEAE			
	....NITZSCHIA		1.200	4
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..CHROOCOCCALES	COCCOID		
	...CHROOCOCCACEAE			
D	....ANACYSTIS		5.700	21
	EUGLENOPHYTA	EUGLENOIDS		
	.EUGLENOPHYCEAE			
	..EUGLENALES			
	...EUGLENACEAE			
L	....TRACHELOMONAS			0

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
L - LESS THEN 1%: MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER . 200-X MICROSCOPE
DIVERSITY INDICES. BASED ON ACTUAL COUNTS:
PHYL/DIV 1.549
CLASS 1.549
ORDER 1.820
FAMILY 2.229
GENERA 3.176

05330000 MINNESOTA RIVER NEAR JORDAN, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TOTAL BORON (B) (UG/L) (01022)	DIS-SOLVED CAD-MIUM (CD) (UG/L) (01025)	SUS-PENDED CAD-MIUM (CD) (UG/L) (01026)	TOTAL CAD-MIUM (CD) (UG/L) (01027)	DIS-SOLVED CHRO-MIUM (CR) (UG/L) (01030)	SUS-PENDED CHRO-MIUM (CR) (UG/L) (01031)	TOTAL CHRO-MIUM (CR) (UG/L) (01034)	DIS-SOLVED COBALT (CO) (UG/L) (01035)	SUS-PENDED COBALT (CO) (UG/L) (01036)	TOTAL COBALT (CO) (UG/L) (01037)
OCT., 03...	190	0	20	20	0	0	0	0	<50	<50
MAR., 12...	--	0	<10	<10	0	0	0	0	<50	<50
JUNE 23...	--	0	<10	<10	0	0	0	0	<50	<50
AUG., 13...	--	5	<5	<10	10	0	10	1	49	50
SEP., 25...	170	--	--	<10	--	--	10	--	--	<50

DEC. 16, 1974
1300 HOURS

IDENTIFICATION OF PHYTOPLANKTON

37,000 CELLS/ML

	_ORGANISM__NAME_______________	_COMMON__NAME_______	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OCCYSTACEAE			
	....ANKISTRODESMUS		530	1
	....OOCYSTIS		270	1
	...SCENEDESMACEAE			
	....ACTINASTRUM		710	2
	....CRUCIGENIA		360	1
L	....SCENEDESMUS			0
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
D	....CYCLOTELLA		32,000	88
	..PENNALES	PENNATE		
	...DIATOMACEAE			
L	....DIATOMA			0
	...FRAGILARIACEAE			
	....SYNEDRA		1,500	4
	...GOMPHONEMATACEAE			
L	....GOMPHONEMA			0
	...NAVICULACEAE	NAVICULOID		
L	....CALONEIS			0
L	....NAVICULA			0
	...NITZSCHIACEAE			
L	....NITZSCHIA			0
	...SURIRELLACEAE			
L	....CYMATOPLEURA			0
L	....SURIRELLA			0

NOTE: D - DOMINANT ORGANISM; GREATER OR EQUAL TO 15%
L - LESS THEN 1%; MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.311
CLASS 0.311
ORDER 0.637
FAMILY 0.790
GENERA 0.866

05330000 MINNESOTA RIVER NEAR JORDAN, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	DIS-SOLVED COPPER (CU) (UG/L) (01040)	SUS-PENDED COPPER (CU) (UG/L) (01041)	TOTAL COPPER (CU) (UG/L) (01042)	CYANIDE (CN) (MG/L) (00720)	DIS-SOLVED IRON (FE) (UG/L) (01046)	TOTAL IRON (FE) (UG/L) (01045)	DIS-SOLVED LEAD (PB) (UG/L) (01049)	SUS-PENDED LEAD (PB) (UG/L) (01050)	TOTAL LEAD (PB) (UG/L) (01051)	TOTAL LITHIUM (LI) (UG/L) (01132)
OCT. 03...	0	<10	<10	.00	40	610	3	<97	<100	30
MAR. 12...	6	<4	<10	--	30	330	3	<97	<100	--
JUNE 23...	9	11	20	--	20	9500	2	<98	<100	--
AUG. 13...	4	<6	<10	--	0	1000	33	67	100	--
SEP. 25...	1	<9	<10	.00	0	890	--	--	<100	20

JAN. 16, 1975
1310 HOURS

IDENTIFICATION OF PHYTOPLANKTON

1,100 CELLS/ML

_ORGANISM__NAME________________	_COMMON__NAME_______	CELLS/ML	PER_CENT
CHLOROPHYTA	GREEN ALGAE		
.CHLOROPHYCEAE			
..CHLOROCOCCALES			
...OOCYSTACEAE			
....ANKISTRODESMUS		29	3
....OOCYSTIS		57	5
...SCENEDESMACEAE			
....SCENEDESMUS		86	8
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..CENTRALES	CENTRIC		
...COSCINODISCACEAE			
#....CYCLOTELLA		390	36
....MELOSIRA		29	3
..PENNALES	PENNATE		
...DIATOMACEAE			
....DIATOMA		29	3
...FRAGILARIACEAE			
....SYNEDRA		14	1
...GOMPHONEMATACEAE			
....GOMPHONEMA		14	1
...NAVICULACEAE	NAVICULOID		
....NAVICULA		14	1
...NITZSCHIACEAE			
#....NITZSCHIA		160	15
CYANOPHYTA	BLUE-GREEN ALGAE		
.MYXOPHYCEAE			
..CHROOCOCCALES	COCCOID		
...CHROOCOCCACEAE			
....AGMENELLUM		57	5
....ANACYSTIS		100	9
..OSCILLATORIALES	FILAMENTOUS		
...OSCILLATORIACEAE			
....LYNGBYA		86	8

NOTE: # = DOMINANT ORGANISM, GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK--RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 1.349
CLASS 1.349
ORDER 2.136
FAMILY 2.021
GENERA 2.978

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05330000 MINNESOTA RIVER NEAR JORDAN, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	DIS-SOLVED MAN-GANESE (MN) (UG/L) (01056)	SUS-PENDED MAN-GANESE (MN) (UG/L) (01054)	TOTAL MAN-GANESE (MN) (UG/L) (01055)	DIS-SOLVED MERCURY (HG) (UG/L) (71890)	SUS-PENDED MERCURY (HG) (UG/L) (71895)	TOTAL MERCURY (HG) (UG/L) (71900)	TOTAL MOLYB-DENUM (MO) (UG/L) (01062)	TOTAL NICKEL (NI) (UG/L) (01067)	OIL AND GREASE (MG/L) (00550)	TOTAL SILVER (AG) (UG/L) (01077)
OCT. 03...	70	460	530	.0	.0	.0	0	<50	0	<10
MAR. 12...	380	0	380	.1	.0	.1	--	--	--	--
JUNE 23...	5	--	--	.7	.0	.7	--	--	--	--
AUG. 13...	40	220	260	.0	.0	.0	--	--	--	--
SEP. 25...	10	370	380	--	--	.2	4	<50	3	<10

FEB. 12, 1975
1200 HOURS

IDENTIFICATION OF PHYTOPLANKTON

940 CELLS/ML

_ORGANISM__NAME_____________	_COMMON__NAME______	CELLS/ML	PER_CENT
CHLOROPHYTA	GREEN ALGAE		
.CHLOROPHYCEAE			
..CHLOROCOCCALES			
...SCENEDESMACEAE			
....ACTINASTRUM		52	5
....CRUCIGENIA		52	5
....SCENEDESMUS		100	11
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..CENTRALES	CENTRIC		
...COSCINODISCACEAE			
D ....CYCLOTELLA		220	23
....MELOSIRA		39	4
..PENNALES	PENNATE		
...FRAGILARIACEAE			
....SYNEDRA		130	14
...GOMPHONEMATACEAE			
....GOMPHONEMA		26	3
...NAVICULACEAE	NAVICULOID		
....NAVICULA		52	5
...NITZSCHIACEAE			
....HANTZSCHIA		13	1
....NITZSCHIA		78	8
...SURIRELLACEAE			
....CYMATOPLEURA		13	1
....SURIRELLA		13	1
CYANOPHYTA	BLUE-GREEN ALGAE		
.MYXOPHYCEAE			
..CHROOCOCCALES	COCCOID		
...CHROOCOCCACEAE			
D ....ANACYSTIS		160	16

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 1.338
CLASS 1.338
ORDER 1.949
FAMILY 2.651
GENERA 3.231

05330000 MINNESOTA RIVER NEAR JORDAN, MINN.--Continued

MAR. 12, 1975
1315 HOURS

IDENTIFICATION OF PHYTOPLANKTON

640 CELLS/ML

_ORGANISM__NAME_	_COMMON__NAME_	CELLS/ML	PER_CENT
CHLOROPHYTA	GREEN ALGAE		
.CHLOROPHYCEAE			
..CHLOROCOCCALES			
...HYDRODICTYACEAE			
....PEDIASTRUM		65	10
..VOLVOCALES			
...CHLAMYDOMONADACEAE			
....CHLAMYDOMONAS		65	10
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..CENTRALES	CENTRIC		
...COSCINODISCACEAE			
# ....CYCLOTELLA		240	36
....MELOSIRA		49	7
..PENNALES	PENNATE		
...GOMPHONEMATACEAE			
....GOMPHONEMA		16	2
...NAVICULACEAE	NAVICULOID		
....NAVICULA		65	10
...NITZSCHIACEAE			
# ....NITZSCHIA		160	24
...SURIRELLACEAE			
....SURIRELLA		16	2

NOTE: # - DOMINANT ORGANISM, GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.702
CLASS 0.702
ORDER 1.706
FAMILY 2.243
GENERA 2.521

APR. 15, 1975
1100 HOURS

IDENTIFICATION OF PHYTOPLANKTON

58,000 CELLS/ML

_ORGANISM__NAME_	_COMMON__NAME_	CELLS/ML	PER_CENT
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..CENTRALES	CENTRIC		
...COSCINODISCACEAE			
....CYCLOTELLA		4,300	7
# ....MELOSIRA		17,000	30
..PENNALES	PENNATE		
...CYMBELLACEAE			
....CYMBELLA		2,200	4
...GOMPHONEMATACEAE			
....GOMPHONEMA		2,200	4
...NAVICULACEAE	NAVICULOID		
....GYROSIGMA		2,200	4
# ....NAVICULA		8,600	15
...NITZSCHIACEAE			
# ....NITZSCHIA		17,000	30
...SURIRELLACEAE			
....CYMATOPLEURA		2,200	4
....SURIRELLA		2,200	4

NOTE: # - DOMINANT ORGANISM, GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
ORDER 0.951
FAMILY 2.132
GENERA 2.607

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MAY 22, 1975
1115 HOURS

IDENTIFICATION OF PHYTOPLANKTON

48,000 CELLS/ML

	_ORGANISM__NAME_______________	_COMMON__NAME_______	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
	....DICTYOSPHAERIUM		5,000	10
	....QUADRIGULA		2,900	6
	...SCENEDESMACEAE			
	....ACTINASTRUM		1,400	3
D	....SCENEDESMUS		17,000	35
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
	....CYCLOTELLA		2,500	5
	....MELOSIRA		3,200	7
	..PENNALES	PENNATE		
	...CYMBELLACEAE			
	....AMPHORA		360	1
	...FRAGILARIACEAE			
	....ASTERIONELLA		3,900	8
D	....FRAGILARIA		9,300	19
	....SYNEDRA		1,400	3
	...NITZSCHIACEAE			
	....NITZSCHIA		360	1
	...SURIRELLACEAE			
	....SURIRELLA		360	1
	EUGLENOPHYTA	EUGLENOIDS		
	.EUGLENOPHYCEAE			
	..EUGLENALES			
	...EUGLENACEAE			
	....EUGLENA		360	1

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 1.049
CLASS 1.049
ORDER 1.424
FAMILY 2.058
GENERA 2.866

05330000 MINNESOTA RIVER NEAR JORDAN, MINN.--Continued

JULY 21, 1975
1045 HOURS

IDENTIFICATION OF PHYTOPLANKTON

5,900 CELLS/ML

	_ORGANISM__NAME_______________	_COMMON__NAME______	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...CHARACIACEAE			
	....SCHROEDERIA		56	1
	...OOCYSTACEAE			
	....OOCYSTIS		280	5
	...SCENEDESMACEAE			
	....ACTINASTRUM		440	8
	....SCENEDESMUS		110	2
	..VOLVOCALES			
	...CHLAMYDOMONADACEAE			
	....CHLAMYDOMONAS		56	1
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
	....CYCLOTELLA		170	3
D	....MELOSIRA		1,600	27
	..PENNALES	PENNATE		
	...FRAGILARIACEAE			
L	....SYNEDRA			0
	...NAVICULACEAE	NAVICULOID		
	....NAVICULA		220	4
	...NITZSCHIACEAE			
	....NITZSCHIA		280	5
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..OSCILLATORIALES	FILAMENTOUS		
	...OSCILLATORIACEAE			
D	....OSCILLATORIA		2,700	45
	EUGLENOPHYTA	EUGLENOIDS		
	.EUGLENOPHYCEAE			
	..EUGLENALES			
	...EUGLENACEAE			
L	....EUGLENA			0

NOTE: D - DOMINANT ORGANISM; GREATER OR EQUAL TO 15%
L - LESS THEN 1%; MAY NOT HAVE BEEN ACTUALLY COUNTED
SAMPLING METHOD: PLASTIC SLIDES, RANDOM
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 1.471
CLASS 1.471
ORDER 1.817
FAMILY 2.042
GENERA 2.285

05330000 MINNESOTA RIVER NEAR JORDAN, MINN.--Continued

AUG. 13, 1975
1330 HOURS

IDENTIFICATION OF PHYTOPLANKTON

120,000 CELLS/ML

	_ORGANISM__NAME_______________	_COMMON__NAME_______	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
D	....DICTYOSPHAERIUM		37,000	30
	....SELENASTRUM		5,800	5
	...SCENEDESMACEAE			
L	....CRUCIGENIA			0
	....SCENEDESMUS		7,200	6
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
D	....MELOSIRA		25,000	20
	..PENNALES	PENNATE		
	...NAVICULACEAE	NAVICULOID		
	....NAVICULA		720	1
	...NITZSCHIACEAE			
	....NITZSCHIA		6,500	5
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..CHROOCOCCALES	COCCOID		
	...CHROOCOCCACEAE			
D	....ANACYSTIS		30,000	24
	..OSCILLATORIALES	FILAMENTOUS		
	...OSCILLATORIACEAE			
	....OSCILLATORIA		12,000	9
	EUGLENOPHYTA	EUGLENOIDS		
	.CRYPTOPHYCEAE	CRYPTOMONADS		
	..CRYPTOMONIDALES			
	...CRYPTOMONODACEAE			
	....CRYPTOMONAS		720	1

NOTE: D - DOMINANT ORGANISM, GREATER OR EQUAL TO 15%
L - LESS THEN 1%, MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:

PHYL/DIV	1.602
CLASS	1.602
ORDER	2.046
FAMILY	2.350
GENERA	2.547

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

PERIPHYTON

Date	Length of exposure (days)	Biomass (g/m^2)		Chlorophyll a (mg/m^2)	Chlorophyll b (mg/m^2)	Biomass pigment ratio	Sampling method
		Dry weight	Ash weight				
Jan 16	63	66	60	58	5.8	103	Polyethylene strip

MINNESOTA RIVER BASIN

05336000 MINNESOTA RIVER NEAR JORDAN, MINN.--Continued

SEP. 25, 1975
1130 HOURS

IDENTIFICATION OF PHYTOPLANKTON

240,000 CELLS/ML

	_ORGANISM__NAME_______________	_COMMON__NAME_______	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...HYDRODICTYACEAE			
L	....PEDIASTRUM			0
	...MICRACTINIACEAE			
L	....GOLENKINIA			0
L	....MICRACTINIUM			0
	...OOCYSTACEAE			
	....ANKISTRODESMUS		2,500	1
	....DICTYOSPHAERIUM		12,000	5
	....GLOEOACTINIUM		6,700	3
	....KIRCHNERIELLA		10,000	4
	....OOCYSTIS		1,700	1
	...SCENEDESMACEAE			
	....ACTINASTRUM		24,000	10
	....CRUCIGENIA		1,700	1
	....SCENEDESMUS		15,000	6
L	....TETRASTRUM			0
	..VOLVOCALES			
	...CHLAMYDOMONADACEAE			
L	....CHLAMYDOMONAS			0
	...PHACOTACEAE			
L	....PHACOTUS			0
	...VOLVOCACEAE			
L	....GONIUM			0
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
	....CYCLOTELLA		9,200	4
	....MELOSIRA		4,200	2
	..PENNALES	PENNATE		
	...NAVICULACEAE	NAVICULOID		
L	....GYROSIGMA			0
L	....NAVICULA			0
	...NITZSCHIACEAE			
L	....NITZSCHIA			0
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..CHROOCOCCALES	COCCOID		
	...CHROOCOCCACEAE			
	....AGMENELLUM		6,700	3
D	....ANACYSTIS		72,000	30
	..OSCILLATORIALES	FILAMENTOUS		
	...NOSTOCACEAE			
L	....ANABAENOPSIS			0
	...OSCILLATORIACEAE			
D	....OSCILLATORIA		68,000	29
	EUGLENOPHYTA	EUGLENOIDS		
	.CRYPTOPHYCEAE	CRYPTOMONADS		
	..CRYPTOMONADALES			
	...CRYPTOMONADACEAE			
L	....CRYPTOMONAS			0
	.EUGLENOPHYCEAE			
	..EUGLENALES			
	...EUGLENACEAE			
L	....EUGLENA			0
L	....TRACHELOMONAS			0
	PYRRHOPHYTA			
	.DINOPHYCEAE	DINOFLAGELLATES		
	..PERIDINIALES			
	...PERIDINIACEAE			
L	....PERIDINIUM			0

NOTE: D = DOMINANT ORGANISM, GREATER OR EQUAL TO 15%
L = LESS THAN 1%, MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 1.212
CLASS 1.212
ORDER 1.879
FAMILY 2.227
GENERA 2.901

Due to computer-telemetering oriented problems the monitor data were not available in publishable form for this report for the following stations:

05288550	Mississippi River at Fridley
05288950	Mississippi River at Ford Plant at St. Paul
05330000	Minnesota River near Jordan
05331000	Mississippi River at St. Paul
05331580	Mississippi River below Lock and Dam 2, at Hastings
05345000	Vermillion River near Empire City

Daily values for Dissolved Oxygen, PH, Temperature, and Specific Conductance are available from the district office.

05330920 MINNESOTA RIVER AT FT. SNELLING STATE PARK, ST. PAUL, MINN.

LOCATION.--Lat 44°52'13", long 93°11'32", in NE¼SE¼ sec.32, T.28 N., R.23 W., Hennepin County, on left bank 3 mi (5 km) upstream from mouth.

DRAINAGE AREA.--16,900 miles.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPERATURE (DEG C) (00020)	TEMPERATURE (DEG C) (00010)	INSTANTANEOUS DISCHARGE (CFS) (00061)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L) (70300)	DISSOLVED SOLIDS (TONS PER DAY) (70302)	SUSPENDED SOLIDS (MG/L) (70299)	TURBIDITY (JTU) (00070)	COLOR (PLATINUM-COBALT UNITS) (00080)	DISSOLVED OXYGEN (MG/L) (00300)
OCT. 02...	1140	--	14.0	245	810	539	357	67	30	10	5.0
NOV. 06...	1120	--	11.0	380	800	546	560	45	20	20	8.2
DEC. 11...	1120	--	2.0	315	889	600	510	23	6	10	10.9
JAN. 15...	1130	-5.0	.0	340	1000	636	584	4	6	20	8.6
15...	1200	--	2.0	271	1000	657	481	8	7	5	10.7
FEB. 12...	1145	--	.0	419	>1000	657	743	0	4	10	7.3
MAR. 12...	1130	--	4.5	432	1040	674	786	29	8	8	8.4
APR. 16...	0900	--	3.5	10300	575	356	9900	552	140	30	11.4
MAY 21...	1100	--	22.0	6950	725	486	9120	180	23	10	7.8
JUNE 17...	1220	--	18.5	12000	650	432	14000	544	140	35	7.7
JULY 01...	1330	--	28.0	12300	698	492	16300	368	120	35	5.8
AUG. 05...	1110	--	24.5	1190	750	456	1470	48	22	20	5.0
SEP. 02...	1200	--	22.0	588	800	494	784	64	19	20	5.4
TIME WTD. AVG.	--	--	--	--	--	540	--	149	--	--	7.9

DATE	CARBON DIOXIDE (CO2) (MG/L) (00405)	PH (UNITS) (00400)	DISSOLVED CALCIUM (CA) (MG/L) (00915)	DISSOLVED MAGNESIUM (MG) (MG/L) (00925)	DISSOLVED SODIUM (NA) (MG/L) (00930)	DISSOLVED POTASSIUM (K) (MG/L) (00935)	ALKALINITY AS CACO3 (MG/L) (00410)	DISSOLVED CHLORIDE (CL) (MG/L) (00940)	DISSOLVED SULFATE (SO4) (MG/L) (00945)	DISSOLVED FLUORIDE (F) (MG/L) (00950)	DISSOLVED AMMONIA NITROGEN (N) (MG/L) (00608)
OCT. 02...	11	7.7	79	41	43	5.8	279	51	110	.4	1.6
NOV. 06...	12	7.7	87	35	47	5.6	299	53	99	.3	1.9
DEC. 11...	8.1	7.9	100	42	46	5.9	329	52	110	.2	1.4
JAN. 15...	11	7.8	110	43	44	6.8	347	54	140	.4	1.1
15...	17	7.6	110	44	58	5.9	342	71	130	.3	1.5
FEB. 12...	34	7.3	110	43	54	5.7	343	61	130	.3	1.7
MAR. 12...	10	7.8	100	50	52	6.1	335	51	160	.3	1.5
APR. 16...	12	7.4	69	24	11	3.8	157	23	61	.2	.40
MAY 21...	4.1	8.0	84	37	17	5.2	211	23	130	.3	.02
JUNE 17...	4.8	7.9	79	30	12	3.7	194	22	69	.4	.04
JULY 01...	3.2	8.1	85	30	16	5.2	208	24	110	.4	.08
AUG. 05...	9.4	7.7	68	38	29	5.6	240	35	110	.3	.36
SEP. 02...	16	7.5	79	36	36	5.2	267	40	99	.3	.00
TIME WTD. AVG.	12	7.7	89	38	36	5.4	273	43	112	.3	.89

05330920 MINNESOTA RIVER AT FT. SNELLING STATE PARK, ST. PAUL, MINN.--Continued

PERIOD OF RECORD.--Chemical analyses: October 1972 to current year.

REMARKS.--BOD and bacteria data furnished by Metropolitan Waste Control Commission, St. Paul, Minn. Water discharge computed by adding 5% to the Minnesota River near Jordan discharge and adjusting for a 1-day lag.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	AMMONIA NITRO- GEN (N) (MG/L) (00610)	TOTAL ORGANIC NITRO- GEN (N) (MG/L) (00605)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625)	DIS- SOLVED NITRITE (N) (MG/L) (00613)	DIS- SOLVED NITRATE (N) (MG/L) (00618)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL NITRO- GEN (N) (MG/L) (00600)	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L) (00666)	BIO- CHEM- ICAL OXYGEN DEMAND 5 DAY (MG/L) (00310)	PHENOLS (UG/L) (32730)	FECAL COLI- FORM (COL. PER 100 ML) (31616)
OCT.											
02...	1.6	1.1	2.7	.06	1.5	1.7	4.4	.49	8.3	2	52
NOV.											
06...	1.9	1.4	3.3	.04	.30	.36	3.7	.45	3.8	2	8
DEC.											
11...	1.4	.60	2.0	.03	.97	1.1	3.1	.54	2.6	1	0
JAN.											
15...	1.1	1.1	2.2	.05	1.4	1.4	3.6	.43	--	2	--
15...	1.6	.10	1.7	.05	1.1	1.1	2.8	.42	2.7	5	0
FEB.											
12...	1.7	.20	1.9	.02	.98	1.0	2.9	.57	3.0	3	0
MAR.											
12...	1.5	.50	2.0	.03	.97	1.9	3.9	.56	1.6	1	0
APR.											
16...	.40	2.5	2.9	.08	9.4	9.6	13	.18	4.7	5	240
MAY											
21...	.07	2.6	2.7	.03	4.6	4.6	7.3	.07	3.6	5	20
JUNE											
17...	.05	2.9	2.9	.08	12	12	15	.16	3.9	8	1750
JULY											
01...	.08	2.2	2.3	.11	7.9	8.6	11	.16	4.8	6	450
AUG.											
05...	.41	1.3	1.7	.07	.12	.25	2.0	.26	2.9	7	40
SEP.											
02...	.27	.73	1.0	.12	.40	.55	1.6	.26	3.9	6	30
TIME WTD. AVG.	.93	1.3	2.3	.06	3.2	3.4	5.7	.36	3.8	4	--

DATE	STREP- TOCOCCI (COL- ONIES PER 100 ML) (31679)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303)	PER- CENT SATUR- ATION (00301)	HARD- NESS (CA,MG) (MG/L) (00900)	NON- CAR- BONATE HARD- NESS (MG/L) (00902)	SODIUM AD- SORP- TION RATIO (00931)	PERCENT SODIUM (00932)	DIS SOLVED AMMONIA (NH4) (MG/L) (71846)	DIS SOLVED NITRATE (NO3) (MG/L) (71851)	DIS SOLVED NITRITE (NO2) (MG/L) (71856)	TOTAL NITRO- GEN (NO3) (MG/L) (71887)
OCT.											
02...	8	.73	50	370	87	1.0	20	2.1	6.6	.20	19
NOV.											
06...	80	.74	77	360	63	1.1	22	2.4	1.3	.13	16
DEC.											
11...	0	.82	81	420	94	1.0	19	1.8	4.3	.10	14
JAN.											
15...	--	.87	61	450	100	.9	17	1.4	6.0	.16	16
15...	0	.89	79	460	110	1.2	21	1.9	4.9	.16	12
FEB.											
12...	0	.89	51	450	110	1.1	20	2.2	4.3	.07	13
MAR.											
12...	8	.92	67	460	120	1.1	20	1.9	4.3	.10	17
APR.											
16...	280	.48	88	270	110	.3	8	.52	42	.26	55
MAY											
21...	80	.66	91	360	150	.4	9	.03	20	.10	32
JUNE											
17...	260	.59	84	320	130	.3	7	.05	53	.26	66
JULY											
01...	12	.67	75	340	130	.4	9	.10	35	.36	48
AUG.											
05...	80	.62	61	330	86	.7	16	.46	.53	.23	8.6
SEP.											
02...	8	.67	63	350	78	.6	18	.00	1.8	.39	6.9
TIME WTD. AVG.	--	.74	71	380	105	.8	16	1.1	14	.19	25

05331000 MISSISSIPPI RIVER AT ST. PAUL, MINN.

LOCATION.--Lat 44°56'40", long 93°05'20", in SE¼NE¼ sec.6, T.28 N., R.22 W., Ramsey County, temperature recorder at gaging station on left bank in St. Paul, 300 ft (91 m) upstream from Robert Street Bridge, 1.1 mi (1.8 km) downstream from Northern States Power Company steam generating plant, 6 mi (10 km) downstream from Minnesota River, and at mile 839.3 (1,350 km) upstream from Ohio River.

DRAINAGE AREA.--36,800 mi² (95,300 km²), approximately.

PERIOD OF RECORD.--Chemical analyses: October 1972 to current year.
Water temperature: October 1956 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPER-ATURE (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	INSTAN-TANEOUS DIS-CHARGE (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	SUS-PENDED SOLIDS (MG/L) (70299)	TUR-BID-ITY (JTU) (00070)	COLOR (PLAT-INUM-COBALT UNITS) (00080)	DIS-SOLVED OXYGEN (MG/L) (00300)
OCT, 04...	1000	--	13,0	2700	445	268	261	2030	16	4	10	10,4
NOV, 12...	1047	1,0	6,5	9790	335	205	198	5190	16	6	20	12,9
DEC, 31...	0930	-,5	,5	4610	440	265	258	3480	12	3	20	13,6
JAN, 23...	1030	-1,0	,5	4900	385	253	241	3520	4	8	10	13,1
FEB, 21...	1030	3,0	2,0	5200	460	272	259	3980	6	2	20	12,6
MAR, 19...	1300	4,0	6,0	5980	485	296	--	4780	12	5	10	11,8
APR, 25...	1030	7,0	6,0	57200	310	186	183	28700	60	20	40	12,1
JUNE 17...	1400	19,0	18,0	25700	495	314	288	22200	196	52	39	8,3
JULY 18...	1000	31,0	25,5	20500	375	235	215	13800	48	18	70	7,8
AUG, 25...	0900	20,0	23,0	6850	390	239	230	4450	4	13	45	8,2
SEP, 29...	0945	14,5	15,0	5940	371	218	209	3730	20	7	20	9,7
TIME WTD, AVG,	--	--	--	--	408	250	234	--	36	--	--	11,0

DATE	CARBON DIOXIDE (CO2) (MG/L) (00405)	PH (UNITS) (00400)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	ALKA-LINITY AS CACO3 (MG/L) (00410)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	DIS-SOLVED AMMONIA NITRO-GEN (N) (MG/L) (00608)	AMMONIA NITRO-GEN (N) (MG/L) (00610)
OCT, 04...	1,2	8,5	54	19	14	2,7	190	14	35	,2	,28	,35
NOV, 12...	1,9	8,2	44	15	8,1	2,7	157	7,0	18	,1	,09	,11
DEC, 31...	2,4	8,2	57	19	11	2,6	193	9,2	29	,2	,19	,26
JAN, 23...	2,9	8,1	48	17	11	2,4	189	11	22	,3	,39	,41
FEB, 21...	4,6	7,9	51	19	13	3,9	189	14	29	,1	,37	,37
MAR, 19...	2,9	8,1	54	22	21	3,3	190	26	34	,2	,34	,38
APR, 25...	2,5	7,9	40	11	4,7	2,8	102	7,8	33	,1	,20	,22
JUNE 17...	1,7	8,3	61	21	8,5	2,8	169	15	40	,2	,00	,04
JULY 18...	1,4	8,3	48	16	7,3	2,7	144	7,8	30	,1	,00	,00
AUG, 25...	,8	8,6	48	18	11	2,4	165	13	28	,2	--	,00
SEP, 29...	1,3	8,4	45	17	9,5	2,2	168	9,8	18	,1	,13	,17
TIME WTD, AVG,	2,1	8,2	50	18	11	2,8	169	12	29	,2	,20	,21

05331000 MISSISSIPPI RIVER AT ST. PAUL, MINN.--Continued

EXTREMES.--Current year:
Water temperatures: Maximum, 31°C July 31; minimum, freezing point on many days during winter period.

Period of record:
Water temperatures: Maximum, 31°C July 24-28, 1964, July 31, 1975; minimum, freezing point on many days during winter period.

REMARKS.--BOD and bacteria data furnished by Metropolitan Waste Control Commission, St. Paul, Minn.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TOTAL ORGANIC NITRO- GEN (N) (MG/L) (00605)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625)	DIS- SOLVED NITRITE (N) (MG/L) (00613)	DIS- SOLVED NITRATE (N) (MG/L) (00618)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL NITRO- GEN (N) (MG/L) (00600)	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L) (00666)	TOTAL PHOS- PHORUS (P) (MG/L) (00665)	DIS- SOLVED SILICA (SIO2) (MG/L) (00955)	BIO- CHEM- ICAL OXYGEN DEMAND 5 DAY (MG/L) (00310)	PHENOLS (UG/L) (32730)	FECAL COLI- FORM (COL. PER 100 ML) (31616)
OCT.												
04...	.85	1.2	.01	.27	.31	1.5	.07	.18	6.2	2.8	1	230
NOV.												
12...	.67	.78	.00	.20	.24	1.0	.05	.05	8.0	1.7	0	240
DEC.												
31...	.52	.76	.01	.42	.44	1.2	.09	.10	12	1.0	0	90
JAN.												
23...	.54	.95	.01	.45	.49	1.4	.11	.14	13	1.6	1	280
FEB.												
21...	.63	1.0	.01	.43	.47	1.5	.12	.12	13	1.2	0	20
MAR.												
19...	.58	.92	.01	.51	.52	1.4	.11	--	--	2.7	3	320
APR.												
25...	1.3	1.5	.09	2.7	2.8	4.3	.10	.24	10	3.6	--	100
JUNE												
17...	1.9	1.9	.05	5.6	5.7	7.6	.11	.21	13	3.3	4	1650
JULY												
18...	1.3	1.3	.02	.56	.78	2.1	.10	.25	14	--	8	--
AUG.												
25...	.72	.72	.02	.14	.17	.89	.07	.19	10	1.4	2	1200
SEP.												
29...	1.2	1.4	.01	.04	.05	1.5	.05	.12	5.8	3.6	2	720
TIME WTD. AVG.	.93	1.1	.02	1.0	1.1	2.2	.09	.16	11	2.3	2	--

DATE	STREP- TOCOCCI (COL- ONIES PER 100 ML) (31679)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303)	PER- CENT SATUR- ATION (00301)	HARD- NESS (CA,MG) (MG/L) (00900)	NON- CAR- BONATE HARD- NESS (MG/L) (00902)	SODIUM AD- SORP- TION RATIO (00931)	PERCENT SODIUM (00932)	DIS SOLVED AMMONIA (NH4) (MG/L) (71846)	DIS SOLVED NITRATE (NO3) (MG/L) (71851)	DIS SOLVED NITRITE (NO2) (MG/L) (71856)	TOTAL NITRO- GEN (NO3) (MG/L) (71887)
OCT.											
04...	120	.36	100	210	23	.4	12	.36	1.2	.03	6.7
NOV.											
12...	130	.28	107	170	15	.3	9	.12	.89	.00	4.5
DEC.											
31...	120	.36	97	220	28	.3	10	.24	1.9	.03	5.3
JAN.											
23...	4	.34	92	190	1	.3	11	.50	2.[illegible]	.03	6.8
FEB.											
21...	0	.37	93	210	17	.4	12	.48	1.9	.03	6.5
MAR.											
19...	160	.40	98	230	35	.6	17	.44	2.3	.03	6.4
APR.											
25...	100	.28	100	150	43	.2	6	.26	12	.30	19
JUNE											
17...	664	.43	89	240	70	.2	7	.00	25	.16	34
JULY											
18...	--	.32	96	190	42	.2	8	.00	2.5	.07	9.2
AUG.											
25...	360	.33	96	190	29	.3	11	--	.62	.07	3.9
SEP.											
29...	248	.30	98	180	14	.3	10	.17	.18	.03	6.4
TIME WTD. AVG.	--	.34	97	198	29	.3	10	.26	4.6	.07	9.8

05331000 MISSISSIPPI RIVER AT ST. PAUL, MINN.--Continued

OCT. 4, 1974
1000 HOURS

IDENTIFICATION OF PHYTOPLANKTON

19,000 CELLS/ML

	ORGANISM NAME	COMMON NAME	CELLS/ML	PER CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...CHARACIACEAE			
L	....SCHROEDERIA			0
	...MICRACTINIACEAE			
	....MICRACTINIUM		710	4
	...OOCYSTACEAE			
	....ANKISTRODESMUS		650	3
	....CHODATELLA		120	1
	....DICTYOSPHAERIUM		710	4
	....KIRCHNERIELLA		2,200	12
	....OOCYSTIS		240	1
L	....TETRAEDRON			0
	...SCENEDESMACEAE			
	....ACTINASTRUM		760	4
	....CRUCIGENIA		940	5
	....SCENEDESMUS		2,200	12
	..ZYGNEMATALES			
	...DESMIDIACEAE	PLACODERM DESMIDS		
L	....ARTHRODESMUS			0
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
D	....CYCLOTELLA		7,400	39
	....MELOSIRA		1,700	9
	..PENNALES	PENNATE		
	...CYMBELLACEAE			
L	....CYMBELLA			0
	...FRAGILARIACEAE			
	....ASTERIONELLA		120	1
	....FRAGILARIA		470	2
	...NAVICULACEAE	NAVICULOID		
	....NAVICULA		180	1
	...NITZSCHIACEAE			
	....NITZSCHIA		120	1
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..CHROOCOCCALES	COCCOID		
	...CHROOCOCCACEAE			
	....ANACYSTIS		410	2

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
L - LESS THEN 1%: MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER, 200-X MICROSCOPE

DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 1.125
CLASS 1.125
ORDER 1.385
FAMILY 2.082
GENERA 3.101

05331000 MISSISSIPPI RIVER AT ST. PAUL, MINN.--Continued

DEC. 31, 1974
0930 HOURS

IDENTIFICATION OF PHYTOPLANKTON

500 CELLS/ML

	ORGANISM NAME	COMMON NAME	CELLS/ML	PER CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
	....ANKISTRODESMUS		16	3
	...SCENEDESMACEAE			
	....SCENEDESMUS		31	6
	..VOLVOCALES			
	...CHLAMYDOMONADACEAE			
	....CHLAMYDOMONAS		16	3
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
D	....CYCLOTELLA		170	34
	....STEPHANODISCUS		16	3
	..PENNALES	PENNATE		
	...ACHNANTHACEAE			
	....ACHNANTHES		16	3
	...FRAGILARIACEAE			
	....SYNEDRA		63	12
	...NAVICULACEAE	NAVICULOID		
D	....NAVICULA		130	25
	...NITZSCHIACEAE			
	....NITZSCHIA		31	6
	.CHRYSOPHYCEAE	YELLOW-BROWN ALGAE		
	..CHRYSOMONADALES			
	...OCHROMONADACEAE			
	....DINOBRYON		16	3

NOTE: D - DOMINANT ORGANISM; GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.544
CLASS 0.738
ORDER 1.676
FAMILY 2.531
GENERA 2.686

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

PERIPHYTON

Date	Length of exposure (days)	Biomass (g/m²)		Chlorophyll a (mg/m²)	Chlorophyll b (mg/m²)	Biomass pigment ratio	Sampling method
		Dry weight	Ash weight				
Nov 12	39	9.2	6.2	8.6	2.2	350	Polyethylene strip
Mar 19	26	18	14	65	3.7	62	Polyethylene strip

05331000 MISSISSIPPI RIVER AT ST. PAUL, MINN.--Continued

FEB. 21, 1975
1030 HOURS

IDENTIFICATION OF PHYTOPLANKTON

3,200 CELLS/ML

	_ORGANISM__NAME	_COMMON__NAME	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
	....CHLORELLA		37	1
	...SCENEDESMACEAE			
	....SCENEDESMUS		150	5
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
	....CYCLOTELLA		110	3
	....MELOSIRA		390	12
	..PENNALES	PENNATE		
	...ACHNANTHACEAE			
	....ACHNANTHES		18	1
	...CYMBELLACEAE			
	....AMPHORA		18	1
	...FRAGILARIACEAE			
	....ASTERIONELLA		18	1
	....SYNEDRA		92	3
	...NAVICULACEAE	NAVICULOID		
	....NAVICULA		130	4
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..OSCILLATORIALES	FILAMENTOUS		
	...OSCILLATORIACEAE			
D	....LYNGBYA		2,200	70

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 1.098
CLASS 1.098
ORDER 1.327
FAMILY 1.506
GENERA 1.648

MAR. 19, 1975
1300 HOURS

IDENTIFICATION OF PHYTOPLANKTON

1,200 CELLS/ML

	_ORGANISM__NAME	_COMMON__NAME	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
	....ANKISTRODESMUS		19	2
	..VOLVOCALES			
	...CHLAMYDOMONADACEAE			
	....CHLAMYDOMONAS		39	3
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
	....CYCLOTELLA		97	8
D	....MELOSIRA		350	30
	..PENNALES	PENNATE		
	...CYMBELLACEAE			
	....CYMBELLA		19	2
	...FRAGILARIACEAE			
	....SYNEDRA		77	7
	...NAVICULACEAE	NAVICULOID		
D	....NAVICULA		390	33
	...NITZSCHIACEAE			
D	....NITZSCHIA		190	16

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.283
CLASS 0.283
ORDER 1.249
FAMILY 2.100
GENERA 2.384

05331000 MISSISSIPPI RIVER AT ST. PAUL, MINN.--Continued

APR. 25, 1975
1030 HOURS

IDENTIFICATION OF PHYTOPLANKTON

2,100 CELLS/ML

_ORGANISM__NAME_______________	_COMMON__NAME_______	CELLS/ML	PER_CENT
CHLOROPHYTA	GREEN ALGAE		
.CHLOROPHYCEAE			
..CHLOROCOCCALES			
...OOCYSTACEAE			
....ANKISTRODESMUS		85	4
..VOLVOCALES			
...CHLAMYDOMONADACEAE			
....CHLAMYDOMONAS		85	4
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..CENTRALES	CENTRIC		
...COSCINODISCACEAE			
....CYCLOTELLA		170	8
..PENNALES	PENNATE		
...ACHNANTHACEAE			
D ....COCCONEIS		340	16
...DIATOMACEAE			
....DIATOMA		170	8
...FRAGILARIACEAE			
....SYNEDRA		170	8
...NAVICULACEAE	NAVICULOID		
D ....NAVICULA		850	40
...NITZSCHIACEAE			
....NITZSCHIA		260	12

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.402
CLASS 0.402
ORDER 0.874
FAMILY 2.565
GENERA 2.565

AUG. 25, 1975
0900 HOURS

IDENTIFICATION OF PHYTOPLANKTON

24,000 CELLS/ML

_ORGANISM__NAME_______________	_COMMON__NAME_______	CELLS/ML	PER_CENT
CHLOROPHYTA	GREEN ALGAE		
.CHLOROPHYCEAE			
..CHLOROCOCCALES			
...OOCYSTACEAE			
....ANKISTRODESMUS		1,200	5
...SCENEDESMACEAE			
D ....SCENEDESMUS		6,900	29
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..CENTRALES	CENTRIC		
...COSCINODISCACEAE			
D ....CYCLOTELLA		7,500	32
D ....MELOSIRA		6,300	27
..PENNALES	PENNATE		
...NITZSCHIACEAE			
....NITZSCHIA		1,700	7
CYANOPHYTA	BLUE-GREEN ALGAE		
.MYXOPHYCEAE			
..OSCILLATORIALES	FILAMENTOUS		
...OSCILLATORIACEAE			
L ....OSCILLATORIA			0

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
L - LESS THEN 1%: MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.926
CLASS 0.926
ORDER 1.258
FAMILY 1.460
GENERA 2.042

05331000 MISSISSIPPI RIVER AT ST. PAUL, MINN.--Continued

SEP. 29, 1975
0945 HOURS

IDENTIFICATION OF PHYTOPLANKTON

19,000 CELLS/ML

	_ORGANISM__NAME_	_COMMON__NAME_	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...HYDRODICTYACEAE			
L	....PEDIASTRUM			0
	...OOCYSTACEAE			
L	....ANKISTRODESMUS			0
L	....CERASTERIAS			0
	....KIRCHNERIELLA		130	1
L	....OOCYSTIS			0
L	....TETRAEDRON			0
	...SCENEDESMACEAE			
L	....ACTINASTRUM			0
	....SCENEDESMUS		1,000	5
L	....TETRASTRUM			0
	..ZYGNEMATALES			
	...DESMIDIACEAE	PLACODERM DESMIDS		
L	....STAURASTRUM			0
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
D	....CYCLOTELLA		4,900	26
	....MELOSIRA		2,500	14
L	....STEPHANODISCUS			0
	..PENNALES	PENNATE		
	...ACHNANTHACEAE			
L	....COCCONEIS			0
	...DIATOMACEAE			
	....DIATOMA		250	1
	...FRAGILARIACEAE			
L	....FRAGILARIA			0
L	....SYNEDRA			0
	...GOMPHONEMATACEAE			
	....GOMPHONEMA		250	1
	...NAVICULACEAE	NAVICULOID		
	....NAVICULA		510	3
	...NITZSCHIACEAE			
	....NITZSCHIA		630	3
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..CHROOCOCCALES	COCCOID		
	...CHROOCOCCACEAE			
	....ANACYSTIS		1,000	5
L	....GOMPHOSPHAERIA			0
	..OSCILLATORIALES	FILAMENTOUS		
	...NOSTOCACEAE			
	....ANABAENA		760	4
D	....APHANIZOMENON		4,300	23
	...OSCILLATORIACEAE			
	....OSCILLATORIA		2,400	13
	EUGLENOPHYTA	EUGLENOIDS		
	.CRYPTOPHYCEAE	CRYPTOMONADS		
	..CRYPTOMONIDALES			
	...CRYPTOMONODACEAE			
L	....CRYPTOMONAS			0
	.EUGLENOPHYCEAE			
	..EUGLENALES			
	...EUGLENACEAE			
L	....EUGLENA			0

NOTE: D - DOMINANT ORGANISM; GREATER OR EQUAL TO 15%
L - LESS THEN 1%; MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 1.269
CLASS 1.269
ORDER 1.839
FAMILY 2.397
GENERA 2.930

05331000 MISSISSIPPI RIVER AT ST. PAUL, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	DIS-SOLVED ARSENIC (AS) (UG/L) (01000)	SUS-PENDED ARSENIC (AS) (UG/L) (01001)	TOTAL ARSENIC (AS) (UG/L) (01002)	DIS-SOLVED CAD-MIUM (CD) (UG/L) (01025)	SUS-PENDED CAD-MIUM (CD) (UG/L) (01026)	TOTAL CAD-MIUM (CD) (UG/L) (01027)	DIS-SOLVED CHRO-MIUM (CR) (UG/L) (01030)	SUS-PENDED CHRO-MIUM (CR) (UG/L) (01031)	TOTAL CHRO-MIUM (CR) (UG/L) (01034)	DIS-SOLVED COBALT (CO) (UG/L) (01035)	SUS-PENDED COBALT (CO) (UG/L) (01036)
OCT.												
04...	1000	1	0	1	0	<10	<10	0	0	0	0	<50
DEC.												
31...	0930	--	--	--	--	--	--	--	--	--	--	--
MAR.												
19...	1500	0	1	1	0	<10	<10	10	25	35	0	<50
JULY												
18...	1000	2	0	2	1	--	--	0	0	--	1	--

DATE	TOTAL COBALT (CO) (UG/L) (01037)	DIS-SOLVED COPPER (CU) (UG/L) (01040)	SUS-PENDED COPPER (CU) (UG/L) (01041)	TOTAL COPPER (CU) (UG/L) (01042)	DIS-SOLVED IRON (FE) (UG/L) (01046)	TOTAL IRON (FE) (UG/L) (01045)	DIS-SOLVED LEAD (PB) (UG/L) (01049)	SUS-PENDED LEAD (PB) (UG/L) (01050)	TOTAL LEAD (PB) (UG/L) (01051)	DIS-SOLVED MAN-GANESE (MN) (UG/L) (01056)	SUS-PENDED MAN-GANESE (MN) (UG/L) (01054)
OCT.											
04...	<50	5	<5	<10	30	570	4	<96	<100	0	130
DEC.											
31...	--	--	--	--	--	--	--	--	--	--	--
MAR.											
19...	<50	8	12	20	20	680	2	<98	<100	100	0
JULY											
18...	--	4	--	--	270	--	11	--	--	0	--

DATE	TOTAL MAN-GANESE (MN) (UG/L) (01055)	DIS-SOLVED MERCURY (HG) (UG/L) (71890)	SUS-PENDED MERCURY (HG) (UG/L) (71895)	TOTAL MERCURY (HG) (UG/L) (71900)	DIS-SOLVED SELE-NIUM (SE) (UG/L) (01145)	SUS-PENDED SELE-NIUM (SE) (UG/L) (01146)	TOTAL SELE-NIUM (SE) (UG/L) (01147)	DIS-SOLVED ZINC (ZN) (UG/L) (01090)	SUS-PENDED ZINC (ZN) (UG/L) (01091)	TOTAL ZINC (ZN) (UG/L) (01092)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)
OCT.											
04...	130	.0	.0	.0	0	0	0	10	90	100	15
DEC.											
31...	--	--	--	--	--	--	--	--	--	--	8.1
MAR.											
19...	100	.1	1.7	1.8	0	0	0	40	20	60	8.0
JULY											
18...	--	.0	.0	.0	0	0	0	30	--	--	24

DATE	TIME	TEMPER-ATURE (DEG C)	DIS-CHARGE (CFS)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .062 MM
OCT.						
04...	1000	13.0	2800	18	136	--
NOV.						
12...	1047	6.5	9380	14	355	--
DEC.						
31...	0930	.5	4870	36	473	--
JAN.						
23...	1030	.5	5150	6	83	--
FEB.						
21...	1030	2.0	5420	28	410	--
MAR.						
18...	1200	1.0	5930	30	480	--
MAY						
05...	1340	11.0	77400	76	15900	--
JUNE						
17...	1400	18.0	26200	236	16700	--
JULY						
18...	1000	25.5	21800	38	2240	--
AUG.						
29...	0900	23.0	6900	24	447	--
SEP.						
29...	0945	15.0	6340	42	719	90

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05331000 MISSISSIPPI RIVER AT ST. PAUL, MINN.--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	14.5	13.5	10.5	10.0	4.5	2.0	1.0	1.0	1.0	0.5	2.0	1.0
2	13.5	13.5	10.5	10.0	5.0	3.0	1.0	0.0	1.0	0.0	2.0	0.5
3	13.0	12.0	10.0	10.0	5.0	3.0	1.0	0.0	0.5	0.0	2.0	1.0
4	12.0	12.0	10.0	8.5	4.5	2.0	1.0	0.5	0.5	0.0	3.0	1.5
5	12.0	12.0	9.0	7.0	5.0	3.5	1.0	0.5	1.0	0.0	2.0	1.0
6	12.0	11.5	8.5	7.0	5.5	3.0	1.5	0.0	1.0	0.0	3.0	1.5
7	12.0	11.5	8.0	6.5	5.5	3.5	1.0	0.0	1.0	0.0	3.0	1.5
8	11.5	11.0	8.5	7.0	5.5	4.0	1.5	0.0	1.0	0.5	3.5	3.5
9	11.5	11.0	8.5	7.0	5.5	4.0	1.0	0.0	1.0	0.0	3.5	2.0
10	11.0	11.0	8.5	8.0	6.0	4.5	0.5	0.0	1.0	0.0	3.5	1.5
11	12.0	11.5	9.0	8.5	6.0	3.5	0.5	0.0	1.0	0.5	4.0	2.0
12	13.0	12.0	9.0	6.5	6.0	4.0	1.5	0.5	1.0	0.0	4.0	2.0
13	13.0	13.0	8.5	5.5	5.5	4.5	2.0	1.0	1.0	0.0	4.0	3.0
14	13.5	13.5	7.0	5.0	6.5	5.5	2.0	0.5	1.0	0.0	4.5	3.0
15	13.5	13.0	6.5	5.0	6.5	5.5	1.5	0.5	0.5	0.0	4.5	3.5
16	13.0	12.0	6.5	4.0	6.5	5.0	1.0	0.0	1.0	0.0	5.0	4.5
17	12.0	12.0	6.5	4.5	6.0	5.0	1.0	0.0	1.0	0.0	5.0	3.0
18	12.0	11.5	6.0	3.5	5.5	3.5	0.0	0.0	1.0	0.0	5.0	4.0
19	11.5	11.0	5.5	3.0	5.0	4.0	0.5	0.0	0.5	0.0	5.5	4.5
20	11.0	10.5	5.5	3.0	5.0	4.0	0.5	0.0	0.5	0.0	5.5	4.5
21	11.5	10.5	3.0	2.0	4.5	4.0	0.5	0.0	0.5	0.0	5.5	4.5
22	11.0	10.5	4.5	1.5	4.0	3.0	1.0	0.0	0.5	0.0	5.5	4.5
23	10.5	10.0	4.5	2.0	4.0	3.0	1.0	0.0	1.0	0.5	5.0	3.5
24	10.0	10.0	4.5	1.5	3.5	2.0	0.5	0.0	1.0	0.0	4.5	3.0
25	10.0	10.0	4.5	1.5	3.0	3.0	0.5	0.0	1.5	0.0	4.5	2.0
26	10.5	10.0	4.0	1.5	3.0	0.5	1.0	0.0	1.5	0.5	4.0	2.0
27	10.0	9.5	4.5	1.5	3.0	1.0	1.0	0.0	1.5	0.0	3.5	1.0
28	10.0	10.0	4.5	1.5	1.5	0.0	1.0	0.0	1.5	0.5	3.0	1.0
29	10.0	10.0	4.5	1.5	0.5	0.0	1.0	0.0	---	---	3.5	1.5
30	10.0	10.0	4.5	1.5	0.5	0.0	1.0	0.0	---	---	3.0	1.5
31	10.5	10.0	---	---	1.0	0.0	1.0	0.0	---	---	3.0	1.5
MONTH	14.5	9.5	10.5	1.5	6.5	0.0	2.0	0.0	1.5	0.0	5.5	0.5

05331000 MISSISSIPPI RIVER AT ST. PAUL, MINN.--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	2.0	1.5	9.0	9.0	24.0	22.0	26.5	25.0	30.5	29.5	21.5	20.5
2	3.5	2.0	9.5	9.0	24.0	22.0	26.0	25.5	29.5	28.5	21.5	20.5
3	3.5	3.0	10.0	9.5	24.0	22.0	26.5	26.0	29.5	28.0	22.0	21.0
4	4.0	3.0	11.0	10.0	24.5	22.0	27.0	26.0	29.5	28.0	22.0	20.5
5	4.0	3.0	11.5	10.5	24.5	22.0	26.5	26.0	29.0	28.0	21.5	20.5
6	4.5	3.5	13.5	12.0	24.0	22.0	26.5	26.0	28.0	26.0	21.0	20.0
7	4.5	3.5	14.0	13.5	24.5	21.5	27.0	26.5	26.5	25.0	20.5	20.0
8	4.5	3.5	14.0	14.0	24.5	22.0	28.0	27.0	26.0	25.0	20.0	19.5
9	4.5	3.5	15.0	14.5	24.5	21.5	28.0	27.0	27.0	25.0	20.0	19.0
10	4.0	3.0	15.0	14.5	23.0	20.5	28.5	27.0	27.0	25.0	19.5	19.0
11	5.0	4.0	16.0	15.5	22.0	20.5	28.0	26.5	28.0	25.5	19.5	19.0
12	5.0	4.5	16.5	16.0	21.5	20.5	27.0	26.0	28.0	26.0	19.0	18.5
13	5.0	4.0	16.5	16.5	23.0	20.5	26.5	25.5	28.0	25.5	18.5	18.0
14	4.5	4.0	18.0	17.0	22.0	20.5	27.0	25.5	26.5	25.0	18.0	17.0
15	5.0	4.5	18.0	17.0	22.0	20.5	28.5	27.0	26.0	25.0	18.0	16.5
16	5.0	4.5	18.5	18.0	23.5	20.0	29.5	27.0	26.0	24.5	18.0	16.5
17	4.5	4.0	18.5	18.0	22.0	20.0	30.0	28.0	25.5	24.0	18.0	17.0
18	4.0	4.0	18.5	18.5	23.0	21.0	30.0	29.0	24.0	23.0	18.0	18.0
19	5.0	4.0	19.5	18.5	23.5	21.0	30.0	29.0	23.5	22.0	18.0	17.0
20	4.5	4.0	20.5	19.5	24.5	21.0	30.5	29.0	22.0	21.5	17.0	16.5
21	4.5	4.0	21.0	20.0	25.0	21.0	30.0	28.0	23.0	22.0	16.5	15.5
22	4.0	4.0	23.5	20.5	24.0	21.0	30.5	28.5	23.0	21.5	16.5	14.5
23	4.5	4.0	24.5	21.0	24.5	23.5	30.5	29.0	23.0	21.0	15.5	14.5
24	5.5	5.0	25.5	23.5	25.5	24.0	30.0	28.5	23.5	21.0	15.0	14.5
25	6.0	5.5	25.5	21.5	25.5	25.0	29.0	28.0	24.0	22.0	15.5	15.0
26	7.0	6.5	24.5	21.0	25.5	24.5	29.0	28.0	24.0	23.0	15.5	14.5
27	8.0	7.0	25.0	23.5	25.5	25.0	29.0	28.0	23.5	21.5	15.5	15.0
28	8.0	8.0	25.0	23.5	26.0	25.0	30.0	28.5	22.0	21.5	15.5	15.0
29	8.5	8.5	24.5	23.0	26.0	25.0	29.5	28.5	22.0	21.5	15.5	15.5
30	8.5	8.5	23.5	21.5	26.0	25.0	30.5	28.5	22.0	21.0	15.5	15.5
31	---	---	23.5	22.0	---	---	31.0	29.0	21.5	21.0	---	---
MONTH	8.5	1.5	25.5	9.0	26.0	20.0	31.0	25.0	30.5	21.0	22.0	14.5
YEAR	31.0	0.0										

05331580 MISSISSIPPI RIVER BELOW LOCK AND DAM 2, AT HASTINGS, MINN.

LOCATION.--Lat 44°44'48", long 92°51'08", in SE¼SE¼ sec.21, T.115 N., R.17 W., Dakota County, at bridge on U.S. Highway 61 at Hastings, 1.2 mi (1.9 km) downstream from Lock and Dam 2, 2.5 mi (4.0 km) upstream from St. Croix River.

DRAINAGE AREA.--37,100 mi² (96,100 km²), approximately.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPER-ATURE (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	INSTAN-TANEOUS DIS-CHARGE (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	SUS-PENDED SOLIDS (MG/L) (70299)	TUR-BID-ITY (JTU) (00070)	COLOR (PLAT-INUM-COBALT UNITS) (00080)	DIS-SOLVED OXYGEN (MG/L) (00300)
OCT., 30...	1130	--	15.0	4800	445	254	3290	36	20	20	9.0
NOV., 27...	1010	--	1.0	6100	570	246	4050	13	7	20	12.5
DEC., 18...	0930	--	.0	4400	480	289	3430	2	3	30	12.3
JAN., 22...	1030	--	.0	4000	550	296	3200	8	4	10	10.8
FEB., 18...	0945	2.0	1.5	6900	500	297	5530	10	10	18	11.8
19...	1010	--	1.0	4800	545	278	3600	5	3	20	10.4
MAR., 19...	0950	--	4.0	6700	540	304	5500	6	4	8	11.4
APR., 02...	0930	--	1.0	9700	540	303	7940	13	7	20	13.1
MAY 14...	1005	--	17.0	48400	430	341	44600	68	29	40	9.0
JUNE 10...	1210	--	19.0	20700	470	300	16800	76	28	20	7.8
JULY 09...	1145	--	26.0	35900	380	258	25000	88	70	65	6.7
AUG., 13...	1215	--	26.5	6500	400	270	4740	48	21	35	6.8
SEP., 10...	1140	--	19.0	7300	440	256	5050	32	1	25	8.7
TIME WTD. AVG.	--	--	--	--	468	284	--	31	--	--	10.0

DATE	CARBON DIOXIDE (CO2) (MG/L) (00405)	PH (UNITS) (00400)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	ALKA-LINITY AS CACO3 (MG/L) (00410)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	DIS-SOLVED AMMONIA NITRO-GEN (N) (MG/L) (00608)
OCT., 30...	3.6	8.0	50	16	20	3.1	187	20	29	.2	1.5
NOV., 27...	2.0	8.2	47	15	14	2.7	163	15	24	.2	1.1
DEC., 18...	12	7.5	53	19	20	2.9	196	22	32	.2	1.3
JAN., 22...	6.2	7.8	55	18	21	3.8	200	27	28	.2	1.4
FEB., 18...	5.0	7.8	50	18	26	3.5	181	33	32	.2	.92
19...	12	7.5	51	21	14	3.1	190	21	30	.2	1.3
MAR., 19...	3.7	8.0	52	21	21	3.9	191	25	32	.4	1.1
APR., 02...	37	7.0	56	22	19	3.3	192	23	42	.4	.89
MAY 14...	1.7	8.0	49	18	10	4.1	89	16	90	.4	.19
JUNE 10...	2.7	8.1	55	22	11	3.4	174	14	48	.2	.45
JULY 09...	2.0	8.0	47	17	7.7	2.8	147	10	30	.2	.22
AUG., 13...	10	7.5	46	17	14	3.0	166	16	32	.2	.48
SEP., 10...	4.3	7.9	47	18	16	3.0	176	18	26	.2	.49
TIME WTD. AVG.	8.0	7.8	51	19	17	3.3	173	20	37	.2	.87

NOTE.--Due to computer oriented problems the monitor data were not available in publishable form for this report. Daily values for Dissolved Oxygen, PH, Temperature, and Specific Conductance are available from the district office.

05331580 MISSISSIPPI RIVER BELOW LOCK AND DAM 2, AT HASTINGS, MINN.--Continued

PERIOD OF RECORD.--Chemical analyses: November 1972 to current year.

REMARKS.--BOD and bacteria data furnished by Metropolitan Waste Control Commission, St. Paul, Minn. Discharge data furnished by Corps of Engineers. Water quality monitor above dam 1.2 mi (1.9 km) upstream from sampling site. Miscellaneous analyses are published for water year 1971.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	AMMONIA NITRO-GEN (N) (MG/L) (00610)	TOTAL ORGANIC NITRO-GEN (N) (MG/L) (00605)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L) (00625)	DIS-SOLVED NITRITE (N) (MG/L) (00613)	DIS-SOLVED NITRATE (N) (MG/L) (00618)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL NITRO-GEN (N) (MG/L) (00600)	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)	BIO-CHEM-ICAL OXYGEN DEMAND 5 DAY (MG/L) (00310)	PHENOLS (UG/L) (32730)	FECAL COLI-FORM (COL. PER 100 ML) (31616)
OCT. 30...	1.6	1.0	2.6	.02	.23	.27	2.9	.28	8.6	1	40
NOV. 27...	1.2	.80	2.0	.01	.31	.32	2.3	--	6.6	9	380
DEC. 18...	1.3	.90	2.2	.00	.43	.43	2.6	.35	3.8	8	0
JAN. 22...	1.6	.80	2.4	.02	.50	.52	2.9	.29	3.0	10	10
FEB. 18...	1.1	1.9	3.0	.03	.62	.65	3.7	.26	--	14	--
19...	1.4	.60	2.0	.01	.54	.56	2.6	.26	1.6	9	0
MAR. 19...	1.1	.70	1.8	.01	.51	.52	2.3	.27	2.0	5	70
APR. 02...	.89	.71	1.6	.01	1.3	1.3	2.9	.22	1.1	19	0
MAY 14...	.87	1.9	2.8	.00	9.8	9.8	13	--	4.6	--	460
JUNE 10...	.47	.07	.54	.00	2.8	2.8	3.3	.13	2.8	3	200
JULY 09...	.31	2.1	2.4	.04	1.3	1.4	3.8	.15	3.7	7	2280
AUG. 13...	.50	1.5	2.0	.04	.07	.11	2.1	.15	4.5	4	10
SEP. 10...	.55	2.0	2.5	.05	.11	.16	2.7	.18	7.2	3	90
TIME WTD. AVG.	.99	1.2	2.1	.02	1.4	1.4	3.6	.23	4.1	8	--

DATE	STREP-TOCOCCI (COL-ONIES PER 100 ML) (31679)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	PER-CENT SATUR-ATION (00301)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	PERCENT SODIUM (00932)	DIS SOLVED AMMONIA (NH4) (MG/L) (71846)	DIS SOLVED NITRATE (NO3) (MG/L) (71851)	DIS SOLVED NITRITE (NO2) (MG/L) (71856)	TOTAL NITRO-GEN (NO3) (MG/L) (71887)
OCT. 30...	40	.35	92	190	4	.6	18	1.9	1.0	.07	13
NOV. 27...	4	.33	90	180	16	.5	14	1.4	1.4	.03	10
DEC. 18...	0	.39	86	210	15	.6	17	1.7	1.9	.00	12
JAN. 22...	8	.40	76	210	11	.6	17	1.8	2.3	.07	13
FEB. 18...	--	.40	87	200	18	.8	22	1.2	2.7	.10	16
19...	0	.38	75	210	24	.5	15	1.7	2.4	.03	11
MAR. 19...	4	.41	89	220	25	.6	17	1.4	2.3	.03	10
APR. 02...	0	.41	99	230	38	.5	15	1.1	5.7	.03	13
MAY 14...	48	.46	95	200	110	.3	10	.24	43	.03	56
JUNE 10...	36	.41	86	230	54	.3	9	.58	12	.00	15
JULY 09...	216	.35	83	190	41	.2	8	.28	5.6	.13	17
AUG. 13...	0	.37	83	180	19	.4	14	.61	.31	.13	9.3
SEP. 10...	12	.35	95	190	16	.5	15	.58	.49	.16	12
TIME WTD. AVG.	--	.39	87	203	30	.5	15	1.1	6.2	.06	16

05340600 ST. CROIX RIVER AT STILLWATER, MINN.

LOCATION.--Lat 45°03'22", long 92°48'11", in NE¼SE¼ sec.28, T.30 N., R.20 W., Washington County, on Interstate Bridge at Stillwater.

PERIOD OF RECORD.--Chemical analyses: November 1974 to September 1975.

REMARKS.--BOD and bacteria data furnished by Metropolitan Waste Control Commission.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPERATURE (DEG C) (00020)	TEMPERATURE (DEG C) (00010)	INSTANTANEOUS DISCHARGE (CFS) (00061)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L) (70300)	DISSOLVED SOLIDS (TONS PER DAY) (70302)	SUSPENDED SOLIDS (MG/L) (70299)	TURBIDITY (JTU) (00070)	COLOR (PLATINUM-COBALT UNITS) (00080)	DISSOLVED OXYGEN (MG/L) (00300)
NOV, 13...	0930	--	4,0	3970	170	120	1290	4	3	30	10,8
DEC, 04...	0900	--	,0	1840	190	126	626	0	3	30	11,1
JAN, 08...	0930	--	,0	1000	220	145	392	0	3	20	10,9
21...	0700	-,4	,0	2600	210	137	962	3	3	35	8,8
FEB, 05...	0930	--	,0	3000	250	158	1280	2	3	20	9,0
MAR, 05...	0705	--	,0	855	224	140	323	8	4	20	9,9
APR, 09...	0700	--	1,0	1700	220	125	574	8	2	30	12,0
MAY 07...	0705	--	12,0	15100	102	84	3420	32	2	65	9,9
JUNE 04...	0710	--	20,0	3200	170	125	1080	20	6	45	9,9
JULY 02...	0700	--	23,0	21200	125	105	6010	40	18	150	6,6
AUG, 06...	0700	--	23,0	2200	200	141	838	36	12	35	8,0
SEP, 03...	0710	--	20,0	1870	200	137	692	14	11	20	8,3
TIME WTD, AVG,	--	--	--	--	190	129	--	14	--	--	9,6

DATE	CARBON DIOXIDE (CO2) (MG/L) (00405)	PH (UNITS) (00400)	DISSOLVED CALCIUM (CA) (MG/L) (00915)	DISSOLVED MAGNESIUM (MG) (MG/L) (00925)	DISSOLVED SODIUM (NA) (MG/L) (00930)	DISSOLVED POTASSIUM (K) (MG/L) (00935)	ALKALINITY AS CACO3 (MG/L) (00410)	DISSOLVED CHLORIDE (CL) (MG/L) (00940)	DISSOLVED SULFATE (SO4) (MG/L) (00945)	DISSOLVED FLUORIDE (F) (MG/L) (00950)	DISSOLVED AMMONIA NITROGEN (N) (MG/L) (00608)
NOV, 13...	2,0	7,9	22	7,2	2,9	1,3	83	3,1	6,2	,0	,02
DEC, 04...	4,5	7,6	26	8,3	3,6	1,5	92	3,1	5,7	,1	,07
JAN, 08...	2,5	7,9	27	9,2	5,2	1,3	101	4,7	6,3	,1	,14
21...	9,5	7,3	25	9,9	4,6	1,2	98	3,5	9,3	,2	,08
FEB, 05...	5,0	7,6	29	8,5	3,7	1,7	103	3,5	5,8	,1	,10
MAR, 05...	6,4	7,5	29	9,7	3,8	1,5	103	2,6	7,1	,2	,09
APR, 09...	3,5	7,7	25	8,9	3,7	1,8	91	3,9	5,9	,1	,08
MAY 07...	7,7	7,0	12	3,7	2,3	1,8	39	2,7	6,4	,0	,07
JUNE 04...	1,3	8,1	23	7,7	3,5	1,5	82	3,2	4,9	,1	,05
JULY 02...	3,3	7,5	15	5,2	2,2	1,9	53	2,6	5,3	,1	,13
AUG, 06...	3,6	7,7	31	9,5	4,0	1,3	93	4,1	5,4	,1	,00
SEP, 03...	3,7	7,7	26	8,5	3,6	1,3	95	3,5	5,3	,1	,00
TIME WTD, AVG,	4,4	7,6	24	8,0	3,6	1,5	86	3,4	6,1	,1	,07

05340600 ST. CROIX RIVER AT STILLWATER, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	AMMONIA NITRO- GEN (N) (MG/L) (00610)	TOTAL ORGANIC NITRO- GEN (N) (MG/L) (00605)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625)	DIS- SOLVED NITRITE (N) (MG/L) (00613)	DIS- SOLVED NITRATE (N) (MG/L) (00618)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL NITRO- GEN (N) (MG/L) (00600)	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L) (00666)	BIO- CHEM- ICAL OXYGEN DEMAND 5 DAY (MG/L) (00310)	PHENOLS (UG/L) (32730)	FECAL COLI- FORM (COL. PER 100 ML) (31616)
NOV. 13...	.03	.45	.48	.00	.20	.20	.68	.00	1.4	2	28
DEC. 04...	.08	.46	.54	.00	.30	.37	.91	.02	1.2	4	40
JAN. 08...	.14	.72	.86	.00	.39	.39	1.3	.21	.9	3	16
21...	.08	.63	.71	.01	.48	.50	1.2	.03	--	1	--
FEB. 05...	.10	.39	.49	.01	.42	.43	.92	.01	.9	8	16
MAR. 05...	.09	.31	.40	.00	.54	.61	1.0	.02	2.0	1	16
APR. 09...	.08	.50	.58	.01	.43	.46	1.0	.03	1.0	10	8
MAY 07...	.12	.81	.93	.00	.13	.18	1.1	.06	1.5	10	0
JUNE 04...	.08	4.2	4.3	.00	.02	.02	4.3	.00	2.9	4	12
JULY 02...	.17	1.4	1.6	.01	.24	.28	1.9	.06	1.2	9	376
AUG. 06...	.00	.96	.96	.01	.02	.03	1.0	.02	--	6	--
SEP. 03...	.03	1.1	1.1	.01	.13	.14	1.2	.03	--	6	--
TIME WTD. AVG.	.08	.99	1.1	.01	.28	.30	1.4	.04	1.6	5	--

DATE	STREP- TOCOCCI (COL- ONIES PER 100 ML) (31679)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303)	PER- CENT SATUR- ATION (00301)	HARD- NESS (CA,MG) (MG/L) (00900)	NON- CAR- BONATE HARD- NESS (MG/L) (00902)	SODIUM AD- SORP- TION RATIO (00931)	PERCENT SODIUM (00932)	DIS SOLVED AMMONIA (NH4) (MG/L) (71846)	DIS SOLVED NITRATE (NO3) (MG/L) (71851)	DIS SOLVED NITRITE (NO2) (MG/L) (71856)	TOTAL NITRO- GEN (NO3) (MG/L) (71887)
NOV. 13...	1300	.16	85	85	2	.1	7	.04	.89	.00	3.0
DEC. 04...	8	.17	78	99	7	.2	7	.09	1.3	.00	4.0
JAN. 08...	4	.20	77	110	4	.2	10	.18	1.7	.00	5.5
21...	--	.19	62	100	6	.2	9	.10	2.1	.03	5.4
FEB. 05...	8	.21	63	110	5	.2	7	.13	1.9	.03	4.1
MAR. 05...	0	.19	70	110	9	.2	7	.12	2.4	.00	4.5
APR. 09...	12	.17	87	99	8	.2	7	.10	1.9	.03	4.6
MAY 07...	0	.11	94	45	6	.1	10	.09	.58	.00	4.9
JUNE 04...	0	.17	111	89	7	.2	8	.06	.09	.00	19
JULY 02...	160	.14	76	59	6	.1	7	.17	1.1	.03	8.3
AUG. 06...	--	.19	94	120	24	.2	7	.00	.09	.03	4.5
SEP. 03...	--	.19	93	100	5	.2	7	.00	.58	.03	5.5
TIME WTD. AVG.	--	.17	83	94	7	.2	8	.09	1.2	.02	6.1

05340600 ST. CROIX RIVER AT STILLWATER, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	DISSOLVED ALUMINUM (AL) (UG/L) (01106)	SUSPENDED ALUMINUM (AL) (UG/L) (01107)	TOTAL ALUMINUM (AL) (UG/L) (01105)	TOTAL ARSENIC (AS) (UG/L) (01002)	TOTAL BARIUM (BA) (UG/L) (01007)	TOTAL BERYLLIUM (BE) (UG/L) (01012)	DISSOLVED BORON (B) (UG/L) (01020)	TOTAL BORON (B) (UG/L) (01022)	TOTAL CADMIUM (CD) (UG/L) (01027)	TOTAL CHROMIUM (CR) (UG/L) (01034)	TOTAL COBALT (CO) (UG/L) (01037)
NOV. 13...	0930	30	<70	<100	1	0	<10	40	40	<10	0	0

DATE	DISSOLVED COPPER (CU) (UG/L) (01040)	SUSPENDED COPPER (CU) (UG/L) (01041)	TOTAL COPPER (CU) (UG/L) (01042)	CYANIDE (CN) (MG/L) (00720)	DISSOLVED IRON (FE) (UG/L) (01046)	TOTAL IRON (FE) (UG/L) (01045)	TOTAL LEAD (PB) (UG/L) (01051)	TOTAL LITHIUM (LI) (UG/L) (01132)	DISSOLVED MANGANESE (MN) (UG/L) (01056)	SUSPENDED MANGANESE (MN) (UG/L) (01054)	TOTAL MANGANESE (MN) (UG/L) (01055)	TOTAL MERCURY (HG) (UG/L) (71900)
NOV. 13...	6	<4	<10	.00	250	580	<100	0	60	0	60	.1

DATE	TOTAL MOLYBDENUM (MO) (UG/L) (01062)	TOTAL NICKEL (NI) (UG/L) (01067)	OIL AND GREASE (MG/L) (00550)	TOTAL SILVER (AG) (UG/L) (01077)	TOTAL SELENIUM (SE) (UG/L) (01147)	DISSOLVED STRONTIUM (SR) (UG/L) (01080)	SUSPENDED STRONTIUM (SR) (UG/L) (01081)	TOTAL STRONTIUM (SR) (UG/L) (01082)	DISSOLVED ZINC (ZN) (UG/L) (01090)	SUSPENDED ZINC (ZN) (UG/L) (01091)	TOTAL ZINC (ZN) (UG/L) (01092)
NOV. 13...	0	<50	10	<10	0	60	0	60	20	80	100

Due to computer-telemetering oriented problems the monitor data were not available in publishable form for this report for the following stations.

05288550	Mississippi River at Fridley
05288950	Mississippi River at Ford Plant at St. Paul
05330000	Minnesota River near Jordan
05331000	Mississippi River at St. Paul
05331580	Mississippi River below Lock and Dam 2, at Hastings
05345000	Vermillion River near Empire City

Daily values for Dissolved Oxygen, PH, Temperature, and Specific Conductance are available from the district office.

05344980 MISSISSIPPI RIVER AT LOCK AND DAM 3, NEAR RED WING, MINN.

LOCATION.--Lat 44°36'36", long 92°36'36", in SW¼NW¼ sec.10, T.113 N., R.15 W., Goodhue County, on right bank on downstream side of dam, 5 mi (8 km) northwest of Red Wing, and at mile 796.7 (1,282 km) upstream from Ohio River.

DRAINAGE AREA.--46,600 mi² (120,700 km²), approximately.

PERIOD OF RECORD.--Chemical analyses: July 1969 to current year.
Water temperatures: August 1969 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	TEMPER-ATURE (DEG C) (00010)	INSTAN-TANEOUS DIS-CHARGE (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	SUS-PENDED SOLIDS (MG/L) (70299)	TUR-BID-ITY (JTU) (00070)	COLOR (PLAT-INUM-COBALT UNITS) (00080)	DIS-SOLVED OXYGEN (MG/L) (00300)	CARBON DIOXIDE (CO2) (MG/L) (00405)
OCT. 23...	0650	12.0	5380	320	211	3070	12	4	10	9.2	1.4
NOV. 27...	0750	1.0	10700	300	208	6010	15	6	20	11.4	2.2
DEC. 18...	0720	.0	7400	335	212	4240	3	3	20	10.6	7.0
JAN. 22...	0800	.0	7700	450	256	5320	4	3	20	10.9	5.2
FEB. 19...	0740	.0	8100	440	239	5230	5	3	20	10.2	10
MAR. 19...	0735	3.0	9400	430	254	6450	9	3	10	11.2	3.2
APR. 02...	0720	1.0	13100	445	263	9300	8	4	10	12.3	34
MAY 14...	0740	17.0	64000	405	269	46500	92	13	55	9.0	2.0
JUNE 19...	0730	21.0	35000	460	306	28900	56	22	40	7.4	2.5
JULY 03...	0730	26.0	64400	413	265	46100	28	19	50	6.5	3.6
AUG. 07...	0750	25.0	7350	330	235	4660	40	17	45	6.6	6.4
SEP. 04...	0735	21.0	9650	325	213	5550	36	13	25	7.4	2.8
TIME WTD. AVG.	--	--	--	388	244	--	26	--	--	9.4	6.7

DATE	PH (UNITS) (00400)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	ALKA-LINITY AS CACO3 (MG/L) (00410)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	DIS-SOLVED AMMONIA NITRO-GEN (N) (MG/L) (00608)	AMMONIA NITRO-GEN (N) (MG/L) (00610)
OCT. 23...	8.3	39	13	13	1.8	143	14	20	.2	.68	.80
NOV. 27...	8.1	41	14	11	2.3	142	12	18	.2	.70	.76
DEC. 18...	7.6	40	14	13	2.3	143	13	19	.2	.71	.71
JAN. 22...	7.8	46	15	19	3.1	169	24	24	.2	1.1	1.2
FEB. 19...	7.5	46	17	14	2.2	165	15	22	.2	.90	.90
MAR. 19...	8.0	49	18	15	3.0	165	18	25	.3	.57	.57
APR. 02...	7.0	48	18	16	2.6	173	18	32	.2	.51	.55
MAY 14...	8.1	49	18	8.9	4.0	128	13	61	.2	.06	.12
JUNE 19...	8.1	55	21	9.9	3.3	158	16	41	.2	.13	.29
JULY 03...	7.9	53	18	8.4	2.8	145	12	43	.2	.22	.24
AUG. 07...	7.6	37	15	11	2.7	131	15	23	.2	.04	.08
SEP. 04...	8.0	41	14	10	2.5	142	11	17	.2	.13	.13
TIME WTD. AVG.	7.8	45	16	12	2.7	150	15	29	.2	.48	.53

05344980 MISSISSIPPI RIVER AT LOCK AND DAM 3, NEAR RED WING, MINN.--Continued

EXTREMES.--Current year:
Water temperatures: Maximum, 29.5 Aug. 4; minimum, freezing point on many days during winter period.
Period of record:
Water temperatures: Maximum, 29.5 Aug. 4, 1975; minimum, freezing point on many days during winter period.

REMARKS.--Some analyses furnished by Metropolitan Waste Control Commission. Discharge data furnished by the St. Paul District, Corps of Engineers.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TOTAL ORGANIC NITROGEN (N) (MG/L) (00605)	TOTAL KJELDAHL NITROGEN (N) (MG/L) (00625)	DISSOLVED NITRITE (N) (MG/L) (00613)	DISSOLVED NITRATE (N) (MG/L) (00618)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL NITROGEN (N) (MG/L) (00600)	DISSOLVED PHOSPHORUS (P) (MG/L) (00666)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L) (00310)	PHENOLS (UG/L) (32730)	FECAL COLIFORM (COL. PER 100 ML) (31616)	STREPTOCOCCI (COLONIES PER 100 ML) (31679)
OCT. 23...	.70	1.5	.00	.76	.79	2.3	.14	3.6	2	0	0
NOV. 27...	.15	.91	.01	.34	.35	1.3	.05	5.9	6	160	16
DEC. 18...	1.3	2.0	.00	.38	.41	2.4	.25	2.7	5	27	8
JAN. 22...	.30	1.5	.02	.53	.55	2.1	.25	3.0	9	0	84
FEB. 19...	.50	1.4	.01	.52	.55	2.0	.19	1.4	5	0	8
MAR. 19...	.63	1.2	.01	.59	.63	1.8	.18	1.8	4	420	0
APR. 02...	.45	1.0	.01	.84	.85	1.9	.17	1.2	9	0	0
MAY 14...	1.7	1.8	.04	2.1	2.6	4.4	.07	2.8	7	60	32
JUNE 19...	1.4	1.7	.07	4.6	4.7	6.4	.08	2.5	2	560	96
JULY 03...	1.6	1.8	.09	2.4	2.5	4.3	.12	2.4	5	1600	192
AUG. 07...	1.3	1.4	.05	.26	.31	1.7	.12	3.3	6	0	24
SEP. 04...	1.4	1.5	.04	.29	.35	1.9	.11	3.5	2	110	28
TIME WTD. AVG.	.95	1.5	.03	1.2	1.2	2.7	.14	2.8	5	--	--

DATE	DISSOLVED SOLIDS (TONS PER AC-FT) (70303)	PERCENT SATURATION (00301)	HARDNESS (CA,MG) (MG/L) (00900)	NONCARBONATE HARDNESS (MG/L) (00902)	SODIUM ADSORPTION RATIO (00931)	PERCENT SODIUM (00932)	DISSOLVED AMMONIA (NH4) (MG/L) (71846)	DISSOLVED NITRATE (NO3) (MG/L) (71851)	DISSOLVED NITRITE (NO2) (MG/L) (71856)	TOTAL NITROGEN (NO3) (MG/L) (71887)
OCT. 23...	.29	87	150	8	.5	16	.88	3.4	.00	10
NOV. 27...	.28	82	160	18	.4	13	.90	1.6	.03	5.8
DEC. 18...	.29	75	160	15	.5	15	.91	1.7	.00	11
JAN. 22...	.35	77	180	8	.6	19	1.4	2.4	.07	9.1
FEB. 19...	.33	71	180	20	.4	14	1.2	2.3	.03	8.8
MAR. 19...	.35	85	200	32	.5	14	.73	2.6	.03	8.1
APR. 02...	.36	89	190	21	.5	15	.66	3.7	.03	8.2
MAY 14...	.37	95	200	69	.3	9	.08	10	.13	19
JUNE 19...	.42	85	220	66	.3	9	.17	21	.23	28
JULY 03...	.36	81	210	61	.3	8	.28	11	.30	19
AUG. 07...	.32	80	150	23	.4	13	.00	1.1	.16	7.6
SEP. 04...	.29	85	160	18	.3	12	.17	1.3	.13	8.2
TIME WTD. AVG.	.33	83	180	30	.4	13	.62	5.2	.10	12

05344980 MISSISSIPPI RIVER AT LOCK AND DAM 3, NEAR RED WING, MINN.--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCTOBER MAX	OCTOBER MIN	NOVEMBER MAX	NOVEMBER MIN	DECEMBER MAX	DECEMBER MIN	JANUARY MAX	JANUARY MIN	FEBRUARY MAX	FEBRUARY MIN	MARCH MAX	MARCH MIN
1	14.5	13.5	14.0	13.5	2.5	2.0	1.5	1.0	1.0	1.0	2.0	1.5
2	13.5	13.5	13.5	13.0	2.0	2.0	1.0	1.0	1.5	1.0	1.5	1.0
3	13.5	13.0	13.0	12.0	---	---	1.5	1.0	1.5	1.0	1.5	1.0
4	13.5	12.5	12.0	11.0	---	---	1.5	1.0	---	---	2.0	1.5
5	13.5	13.5	11.0	10.0	---	---	1.0	1.0	---	---	2.0	2.0
6	13.5	12.5	10.0	10.0	---	---	1.0	1.0	---	---	2.5	1.5
7	12.5	12.5	10.0	9.5	---	---	1.5	1.0	---	---	2.5	2.0
8	13.0	12.5	10.5	9.5	---	---	1.5	1.5	---	---	2.0	1.5
9	13.5	12.5	10.0	9.5	---	---	1.5	1.5	---	---	1.5	1.5
10	13.5	13.0	9.5	9.5	---	---	1.5	1.5	---	---	2.0	1.5
11	14.5	13.5	9.5	9.0	2.0	1.0	1.5	0.5	1.0	1.0	2.0	1.5
12	14.5	14.5	9.0	8.0	2.0	1.5	0.5	0.5	1.0	1.0	2.5	2.0
13	14.5	14.0	8.0	6.5	2.5	2.0	1.0	0.5	1.5	1.0	2.0	1.5
14	14.0	13.0	6.5	6.0	2.5	2.0	1.0	0.5	1.5	1.0	2.0	1.5
15	13.0	12.5	6.0	5.0	2.0	2.0	1.0	1.0	2.0	1.0	2.5	1.5
16	12.5	12.5	5.0	4.5	2.0	2.0	1.0	1.0	2.0	1.5	3.0	2.0
17	12.5	12.0	5.0	4.5	2.0	1.5	1.0	1.0	2.0	1.5	5.0	2.5
18	12.0	12.0	5.5	5.0	1.5	1.5	1.5	1.0	2.0	2.0	4.5	3.5
19	12.0	12.0	6.0	5.0	1.5	1.5	1.0	1.0	2.0	1.5	4.5	3.5
20	12.0	11.5	5.5	4.5	1.5	1.5	1.0	1.0	2.0	1.0	5.0	4.5
21	12.0	11.5	4.5	4.5	1.5	1.5	1.5	1.0	2.0	1.5	5.0	4.0
22	12.0	11.5	5.5	4.5	1.5	1.0	1.0	1.0	2.0	1.5	4.5	3.5
23	12.0	12.0	5.0	4.5	1.5	1.0	1.0	1.0	2.0	1.5	4.5	3.5
24	12.5	12.0	4.5	4.5	1.5	1.0	1.5	1.0	2.5	2.0	3.5	2.5
25	12.5	12.0	4.5	4.0	1.5	1.0	1.0	1.0	3.5	2.0	3.0	2.0
26	12.0	11.5	4.0	3.0	1.0	1.0	1.0	1.0	2.5	2.0	2.5	2.0
27	12.0	11.5	3.0	2.5	1.5	1.0	1.0	1.0	2.0	1.5	2.0	1.5
28	13.0	12.0	2.5	2.0	1.5	1.5	1.5	1.0	2.0	1.5	2.5	1.5
29	13.0	12.5	2.5	2.0	2.0	1.5	1.5	1.0	---	---	2.5	1.5
30	14.0	13.0	2.5	2.0	2.0	1.5	1.5	1.0	---	---	2.0	1.0
31	13.5	13.0	---	---	1.5	1.5	1.0	1.0	---	---	2.0	1.5
MONTH	14.5	11.5	14.0	2.0	---	---	1.5	0.5	---	---	5.0	1.0

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	DIS-SOLVED ALUMINUM (AL) (UG/L) (01106)	SUS-PENDED ALUMINUM (AL) (UG/L) (01107)	TOTAL ALUMINUM (AL) (UG/L) (01105)	TOTAL ARSENIC (AS) (UG/L) (01002)	TOTAL BARIUM (BA) (UG/L) (01007)	TOTAL BERYLLIUM (BE) (UG/L) (01012)	DIS-SOLVED BORON (B) (UG/L) (01020)	TOTAL BORON (B) (UG/L) (01022)	TOTAL CADMIUM (CD) (UG/L) (01027)	TOTAL CHROMIUM (CR) (UG/L) (01034)	TOTAL COBALT (CO) (UG/L) (01037)
OCT. 23...	0650	50	350	400	1	<100	<10	90	90	<10	0	<50

DATE	DIS-SOLVED COPPER (CU) (UG/L) (01040)	SUS-PENDED COPPER (CU) (UG/L) (01041)	TOTAL COPPER (CU) (UG/L) (01042)	CYANIDE (CN) (MG/L) (00720)	DIS-SOLVED IRON (FE) (UG/L) (01046)	TOTAL IRON (FE) (UG/L) (01045)	TOTAL LEAD (PB) (UG/L) (01051)	TOTAL LITHIUM (LI) (UG/L) (01132)	DIS-SOLVED MANGANESE (MN) (UG/L) (01056)	SUS-PENDED MANGANESE (MN) (UG/L) (01054)	TOTAL MANGANESE (MN) (UG/L) (01055)	TOTAL MERCURY (HG) (UG/L) (71900)
OCT. 23...	4	<6	<10	.00	220	380	<100	0	0	130	130	.0

DATE	TOTAL MOLYBDENUM (MO) (UG/L) (01062)	TOTAL NICKEL (NI) (UG/L) (01067)	OIL AND GREASE (MG/L) (00550)	TOTAL SILVER (AG) (UG/L) (01077)	TOTAL SELENIUM (SE) (UG/L) (01147)	DIS-SOLVED STRONTIUM (SR) (UG/L) (01080)	SUS-PENDED STRONTIUM (SR) (UG/L) (01081)	TOTAL STRONTIUM (SR) (UG/L) (01082)	DIS-SOLVED ZINC (ZN) (UG/L) (01090)	SUS-PENDED ZINC (ZN) (UG/L) (01091)	TOTAL ZINC (ZN) (UG/L) (01092)
OCT. 23...	0	<50	0	<10	0	80	0	80	10	70	80

05344980 MISSISSIPPI RIVER AT LOCK AND DAM 3, NEAR RED WING, MINN.--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	2.5	1.5	9.5	8.0	21.5	19.5	27.0	25.5	28.5	27.5	24.0	23.0
2	3.0	2.0	9.5	9.0	21.0	20.0	27.0	26.0	28.5	27.5	24.0	23.0
3	3.0	2.0	10.5	9.0	21.5	20.0	28.0	26.0	29.0	27.5	24.0	23.0
4	3.5	2.0	10.5	10.0	21.5	20.5	27.5	26.5	29.5	27.5	23.0	22.5
5	4.0	2.5	12.5	10.5	21.5	20.5	28.0	26.5	29.0	27.0	23.5	22.0
6	5.0	3.5	13.5	12.0	21.0	20.0	28.0	27.0	28.0	26.5	22.5	21.5
7	5.5	4.0	13.5	13.0	21.5	20.0	28.5	27.0	27.0	25.5	22.5	21.5
8	5.5	4.0	13.5	12.5	21.5	20.5	28.0	27.0	26.0	25.0	23.0	21.0
9	5.5	4.0	15.0	13.5	21.5	20.0	27.0	26.0	27.0	25.0	---	---
10	5.5	3.5	16.0	14.0	19.5	19.5	26.0	25.5	27.0	26.0	---	---
11	6.0	4.0	16.0	15.0	20.0	19.5	25.5	24.5	27.0	25.0	---	---
12	6.5	5.0	17.0	15.0	19.5	18.5	24.5	23.5	27.0	26.0	---	---
13	6.5	5.0	17.5	16.0	20.5	19.0	24.0	23.0	26.5	25.5	---	---
14	7.0	6.0	17.5	16.5	20.5	19.5	24.5	22.5	26.0	25.5	---	---
15	7.5	6.0	17.0	16.0	19.5	19.0	25.5	23.5	26.5	25.5	---	---
16	7.5	6.0	18.0	16.0	20.5	19.0	26.5	24.5	26.5	25.5	---	---
17	7.0	5.5	18.5	17.0	21.0	20.0	27.0	25.0	25.5	25.0	19.0	19.0
18	6.0	5.0	19.5	18.0	21.0	20.0	27.5	25.5	25.0	24.5	20.5	19.0
19	5.5	5.0	20.5	18.5	22.0	20.0	27.5	26.5	---	---	19.0	18.0
20	5.0	4.5	21.0	19.5	23.5	21.5	27.5	26.5	24.5	23.5	18.0	17.0
21	5.5	4.0	22.0	20.5	24.0	22.5	27.5	26.0	25.0	24.0	17.0	16.0
22	6.5	5.0	22.5	21.5	24.0	22.5	28.5	27.0	24.5	24.0	16.5	15.5
23	7.0	6.0	22.5	22.0	24.5	23.0	27.5	27.0	24.5	23.5	17.0	16.0
24	7.5	6.0	23.0	21.5	25.0	23.5	27.0	26.5	25.0	23.5	17.0	16.0
25	8.5	7.0	23.5	22.5	25.0	24.0	27.0	25.5	25.0	24.0	17.0	16.0
26	8.5	7.5	23.0	22.0	25.5	24.5	27.5	26.0	24.5	23.5	17.0	16.0
27	8.0	7.5	23.0	21.5	26.0	24.5	27.5	26.0	23.5	22.5	17.0	16.0
28	8.5	8.0	22.5	21.5	26.5	25.5	28.0	26.5	23.5	23.0	17.0	16.5
29	8.5	8.0	21.5	20.5	27.0	26.0	28.5	27.0	24.0	23.0	18.0	16.5
30	9.0	8.5	20.5	20.0	26.5	25.5	28.5	27.0	23.5	23.0	17.5	16.5
31	---	---	21.0	19.5	---	---	28.5	27.5	23.5	22.5	---	---
MONTH	9.0	1.5	23.5	8.0	27.0	18.5	28.5	22.5	29.5	22.5	---	---
YEAR	29.5	0.5										

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	DIS-SOLVED GROSS ALPHA AS U-NAT. (UG/L) (80030)	SUS-PENDED GROSS ALPHA AS U-NAT. (UG/L) (80040)	DIS-SOLVED GROSS BETA AS CS-137 (PC/L) (03515)	SUS-PENDED GROSS BETA AS CS-137 (PC/L) (03516)	DIS-SOLVED GROSS BETA AS SR90 /Y90 (PC/L) (80050)	SUS-PENDED GROSS BETA AS SR90 /Y90 (PC/L) (80060)	DIS-SOLVED RA-226 (RADON METHOD) (PC/L) (09511)	DIS-SOLVED NATURAL URANIUM (U) (UG/L) (22703)	TOTAL FILT-RABLE RESIDUE (MG/L) (00515)	TOTAL NON-FILT-RABLE RESIDUE (MG/L) (00530)
OCT.											
23...	0650	<4.8	6.0	4.5	3.7	3.9	3.2	.05	.4	310	12

05345000 VERMILLION RIVER NEAR EMPIRE CITY, MINN.

LOCATION.--Lat 44°40'00", long 93°03'17", on line between sections 23 and 24, T.114 N., R.19 W., Dakota County at gaging station, on right bank on downstream side of bridge on County Road 79, 2 mi (3.2 km) northwest of Empire City and 4 mi (6.4 km) northeast of Farmington.

DRAINAGE AREA.--110 mi² (285 km²).

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPER- ATURE (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300)	DIS- SOLVED SOLIDS (TONS PER DAY) (70302)	SUS- PENDED SOLIDS (MG/L) (70299)	TUR- BID- ITY (JTU) (00070)	COLOR (PLAT- INUM- COBALT UNITS) (00080)	DIS- SOLVED OXYGEN (MG/L) (00300)
OCT. 10...	1200	24.0	13.0	19	662	381	19.5	17	2	3	8.8
NOV. 13...	1111	-2.0	3.0	24	650	396	25.7	12	6	3	11.1
DEC. 19...	1130	-3.0	1.0	19	610	389	20.0	8	2	5	11.4
JAN. 15...	1215	-12.0	.0	9.1	605	385	9.46	0	4	3	3.9
FEB. 20...	1100	-4.5	1.5	18	630	369	17.9	6	3	5	10.6
MAR. 17...	1200	2.0	5.0	18	670	396	19.2	0	5	10	9.4
APR. 22...	1130	11.5	7.5	113	565	341	104	32	5	20	9.8
MAY 16...	1230	23.0	14.0	79	620	374	79.8	64	3	25	9.2
JUNE 19...	1200	24.0	17.5	171	550	352	163	16	4	45	6.6
JULY 22...	1100	24.0	19.0	39	645	376	39.6	52	11	10	7.3
AUG. 18...	1115	20.5	14.5	32	660	383	33.1	28	7	17	8.6
SEP. 24...	1100	15.5	10.5	33	720	403	35.9	12	3	7	9.6
TIME WTD. AVG.	--	--	--	--	632	379	--	21	--	--	8.8

DATE	CARBON DIOXIDE (CO2) (MG/L) (00405)	PH (UNITS) (00400)	DIS- SOLVED CAL- CIUM (CA) (MG/L) (00915)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L) (00925)	DIS- SOLVED SODIUM (NA) (MG/L) (00930)	DIS- SOLVED PO- TAS- SIUM (K) (MG/L) (00935)	ALKA- LINITY AS CACO3 (MG/L) (00410)	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940)	DIS- SOLVED SULFATE (SO4) (MG/L) (00945)	DIS- SOLVED FLUO- RIDE (F) (MG/L) (00950)	DIS- SOLVED AMMONIA NITRO- GEN (N) (MG/L) (00608)
OCT. 10...	6.1	7.9	73	27	22	3.8	248	36	42	.3	1.5
NOV. 13...	4.8	8.0	76	26	32	3.6	244	43	41	.2	.76
DEC. 19...	4.7	8.0	73	25	29	3.0	243	45	40	.3	1.6
JAN. 15...	5.8	7.9	74	24	29	3.5	237	46	41	.2	.33
FEB. 20...	4.8	8.0	72	24	24	3.2	245	36	43	.2	1.4
MAR. 17...	5.8	7.9	71	26	35	2.5	237	54	38	.2	1.1
APR. 22...	4.7	7.9	70	22	13	3.2	189	27	49	.2	.48
MAY 16...	3.8	8.1	77	26	18	3.1	244	30	42	.1	.07
JUNE 19...	4.4	8.0	71	25	12	2.1	226	22	34	.2	.00
JULY 22...	3.0	8.2	74	26	21	2.5	244	35	34	.2	.00
AUG. 18...	2.9	8.2	73	26	22	3.2	240	36	33	.2	.02
SEP. 24...	4.8	8.0	75	25	25	3.3	248	34	31	.2	.00
TIME WTD. AVG.	4.6	8.0	73	25	24	3.1	237	37	39	.2	.61

05345000 VERMILLION RIVER NEAR EMPIRE CITY, MINN.--Continued

PERIOD OF RECORD.--Chemical analyses: October 1972 to current year.

REMARKS.--BOD and bacteria data furnished by Metropolitan Waste Control Commission, St. Paul, Minn.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	AMMONIA NITRO- GEN (N) (MG/L) (00610)	TOTAL ORGANIC NITRO- GEN (N) (MG/L) (00605)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625)	DIS- SOLVED NITRITE (N) (MG/L) (00613)	DIS- SOLVED NITRATE (N) (MG/L) (00618)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL NITRO- GEN (N) (MG/L) (00600)	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L) (00666)	BIO- CHEM- ICAL OXYGEN DEMAND 5 DAY (MG/L) (00310)	PHENOLS (UG/L) (32730)	FECAL COLI- FORM (COL. PER 100 ML) (31616)
OCT. 10...	1.5	.30	1.8	.12	1.5	1.6	3.4	.87	6.3	0	750
NOV. 13...	.76	.54	1.3	.07	2.4	2.6	3.9	.88	2.5	1	8
DEC. 19...	1.7	.20	1.9	.05	2.6	2.6	4.5	1.0	4.7	5	40
JAN. 15...	.36	.04	.40	.05	1.2	1.3	1.7	.69	7.9	0	0
FEB. 20...	1.4	.40	1.8	.06	1.8	1.9	3.7	1.0	3.6	0	10
MAR. 17...	1.1	.60	1.7	.07	2.0	2.1	3.8	1.2	7.4	5	0
APR. 22...	.48	1.0	1.5	.06	3.1	3.4	4.9	.28	3.5	5	30
MAY 16...	.07	.81	.88	.04	1.4	1.5	2.4	.45	1.8	1	10
JUNE 19...	.04	.83	.87	.04	1.4	1.4	2.3	.23	1.3	0	210
JULY 22...	.00	.62	.62	.08	1.6	1.8	2.4	.52	2.0	4	450
AUG. 18...	.04	.39	.43	.09	2.1	2.2	2.6	.65	1.6	4	120
SEP. 24...	.07	.53	.60	.10	2.7	2.8	3.4	.69	1.5	2	380
TIME WTD. AVG.	.63	.52	1.2	.07	2.0	2.1	3.3	.71	3.7	2	--

DATE	STREP- TOCOCCI (COL- ONIES PER 100 ML) (31679)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303)	PER- CENT SATUR- ATION (00301)	HARD- NESS (CA,MG) (MG/L) (00900)	NON- CAR- BONATE HARD- NESS (MG/L) (00902)	SODIUM AD- SORP- TION RATIO (00931)	PERCENT SODIUM (00932)	DIS SOLVED AMMONIA (NH4) (MG/L) (71846)	DIS SOLVED NITRATE (NO3) (MG/L) (71851)	DIS SOLVED NITRITE (NO2) (MG/L) (71856)	TOTAL NITRO- GEN (NO3) (MG/L) (71887)
OCT. 10...	360	.52	81	290	46	.6	14	1.9	6.6	.39	15
NOV. 13...	32	.54	85	300	52	.8	19	.98	11	.23	17
DEC. 19...	0	.53	82	290	42	.7	18	2.1	11	.16	20
JAN. 15...	16	.52	27	280	47	.8	18	.46	5.5	.16	7.5
FEB. 20...	8	.50	78	280	33	.6	16	1.8	8.6	.20	16
MAR. 17...	0	.54	76	280	47	.9	21	1.4	9.0	.23	17
APR. 22...	16	.46	83	270	76	.3	10	.62	14	.20	22
MAY 16...	24	.51	91	300	55	.5	11	.09	6.0	.13	11
JUNE 19...	104	.48	71	280	54	.3	8	.00	6.0	.13	10
JULY 22...	568	.51	80	290	47	.5	13	.00	7.2	.26	11
AUG. 18...	124	.52	86	290	50	.6	14	.03	9.3	.30	12
SEP. 24...	160	.55	88	290	43	.6	16	.00	12	.33	15
TIME WTD. AVG.	--	.52	77	287	49	.6	15	.78	8.9	.23	14

05346000 VERMILLION RIVER AT HASTINGS, MINN.

LOCATION.--Lat 44°43'12", long 92°51'57", SE¼SW¼ sec.33, T.115 N., R.17 W., Dakota County, at bridge on County Road 47, in Hastings, 0.7 mi (1.1 km) upstream from mill dam, and 3 mi (4.8 km) upstream from Vermillion Slough.

DRAINAGE AREA.--195 mi ($505 km^2$).

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPER- ATURE (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300)	DIS- SOLVED SOLIDS (TONS PER DAY) (70302)	SUS- PENDED SOLIDS (MG/L) (70299)	TUR- BID- ITY (JTU) (00070)	COLOR (PLAT- INUM- COBALT UNITS) (00080)	DIS- SOLVED OXYGEN (MG/L) (00300)
OCT.											
10...	0930	14.0	9.0	29	510	342	26.8	10	2	5	10.5
NOV.											
13...	1411	-3.0	1.0	28	535	353	26.7	20	5	0	14.4
DEC.											
20...	1000	-3.0	.0	25	540	345	23.3	8	1	5	12.2
JAN.											
17...	1115	-3.0	.0	16	539	343	14.8	0	2	3	3.2
FEB.											
10...	1000	<-5.0	.0	19	600	384	19.7	6	2	8	--
MAR.											
21...	1000	8.0	.5	67	520	298	37.8	40	10	8	9.4
APR.											
29...	1230	11.0	8.0	984	300	191	507	128	50	65	9.5
MAY											
16...	1030	18.0	12.5	114	595	358	108	66	1	25	10.6
JUNE											
19...	1000	24.5	17.0	265	520	331	237	36	12	45	8.2
JULY											
22...	0900	25.0	21.0	54	615	354	51.6	12	10	10	8.2
AUG.											
18...	1000	17.0	15.0	44	600	355	42.2	24	5	20	10.2
SEP.											
24...	0930	11.0	8.0	50	620	372	50.2	16	2	4	11.4
TIME WTD. AVG.	--	--	--	--	541	335	--	30	--	--	9.8

DATE	CARBON DIOXIDE (CO2) (MG/L) (00405)	PH (UNITS) (00400)	DIS- SOLVED CAL- CIUM (CA) (MG/L) (00915)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L) (00925)	DIS- SOLVED SODIUM (NA) (MG/L) (00930)	DIS- SOLVED PO- TAS- SIUM (K) (MG/L) (00935)	ALKA- LINITY AS CACO3 (MG/L) (00410)	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940)	DIS- SOLVED SULFATE (SO4) (MG/L) (00945)	DIS- SOLVED FLUO- RIDE (F) (MG/L) (00950)	DIS- SOLVED AMMONIA NITRO- GEN (N) (MG/L) (00608)
OCT.											
10...	3.6	8.1	70	25	14	2.6	235	23	38	.2	.03
NOV.											
13...	18	7.4	70	26	19	1.8	229	27	40	.2	.03
DEC.											
20...	3.5	8.1	67	24	18	2.6	226	30	38	.2	.54
JAN.											
17...	5.7	7.9	71	25	16	2.8	230	26	41	.1	.16
FEB.											
10...	9.5	7.7	75	26	19	3.2	243	32	40	.2	.02
MAR.											
21...	2.9	8.1	63	21	13	3.8	190	21	39	.3	.38
APR.											
29...	7.5	7.4	34	11	5.4	2.8	97	10	31	.2	.07
MAY											
16...	1.8	8.4	73	26	15	2.9	235	25	40	.1	.01
JUNE											
19...	2.6	8.2	68	23	10	2.0	212	19	32	.2	.00
JULY											
22...	1.4	8.5	73	25	14	1.9	229	25	33	.2	.00
AUG.											
18...	1.8	8.4	69	25	16	2.5	227	27	32	.2	.00
SEP.											
24...	1.8	8.4	72	25	17	2.5	230	25	31	.2	.00
TIME WTD. AVG.	5.0	8.1	67	24	15	2.6	215	24	36	.2	.15

05346000 VERMILLION RIVER AT HASTINGS, MINN.--Continued

PERIOD OF RECORD.--Chemical analyses: October 1972 to current year.

REMARKS.--BOD and bacteria data furnished by Metropolitan Waste Control Commission, St. Paul, Minn. Miscellaneous analyses are published for water year 1967.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	AMMONIA NITRO-GEN (N) (MG/L) (00610)	TOTAL ORGANIC NITRO-GEN (N) (MG/L) (00605)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L) (00625)	DIS-SOLVED NITRITE (N) (MG/L) (00613)	DIS-SOLVED NITRATE (N) (MG/L) (00618)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL NITRO-GEN (N) (MG/L) (00600)	DIS-SOL-VED PHOS-PHORUS (P) (MG/L) (00666)	BIO-CHEM-ICAL OXYGEN DEMAND 5 DAY (MG/L) (00310)	PHENOLS (UG/L) (32730)	FECAL COLI-FORM (COL. PER 100 ML) (31616)
OCT. 10...	.05	.43	.48	.04	2.6	2.6	3.1	.44	1.3	0	320
NOV. 13...	.03	.53	.56	.02	3.1	3.1	3.7	.45	1.8	0	460
DEC. 20...	.56	.09	.65	.04	3.5	3.6	4.3	.57	1.3	1	20
JAN. 17...	.18	.28	.46	.04	2.3	2.3	2.8	.36	2.5	2	8
FEB. 10...	.62	.27	.89	.03	3.4	3.4	4.3	.46	2.2	4	4
MAR. 21...	.39	.81	1.2	.30	2.7	3.1	4.3	.51	4.7	9	300
APR. 29...	.09	1.7	1.8	.04	3.4	3.4	5.2	.15	3.7	6	680
MAY 16...	.01	.74	.75	.01	1.9	1.9	2.7	.37	1.1	0	30
JUNE 19...	.00	.87	.87	.02	1.6	1.7	2.6	.15	2.3	2	1010
JULY 22...	.00	.76	.76	.02	2.3	2.4	3.2	.33	1.4	3	1400
AUG. 18...	.00	.43	.43	.02	2.9	2.9	3.3	.37	1.2	--	920
SEP. 24...	.00	.72	.72	.01	3.3	3.3	4.0	.18	1.2	2	70
TIME WTD. AVG.	.16	.64	.80	.05	2.8	2.8	3.6	.38	2.0	3	--

DATE	STREP-TOCOCCI (COL-ONIES PER 100 ML) (31679)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	PER-CENT SATUR-ATION (00301)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	PERCENT SODIUM (00932)	DIS SOLVED AMMONIA (NH4) (MG/L) (71846)	DIS SOLVED NITRATE (NO3) (MG/L) (71851)	DIS SOLVED NITRITE (NO2) (MG/L) (71856)	TOTAL NITRO-GEN (NO3) (MG/L) (71887)
OCT. 10...	270	.67	93	280	42	.4	10	.06	11	.13	14
NOV. 13...	270	.68	106	280	53	.5	13	.04	14	.07	16
DEC. 20...	28	.67	85	270	40	.5	13	.72	15	.13	19
JAN. 17...	36	.67	23	280	50	.4	11	.23	10	.13	12
FEB. 10...	4	.52	--	290	52	.5	12	.80	15	.10	19
MAR. 21...	1200	.61	67	240	53	.4	10	.50	12	.99	19
APR. 29...	1200	.26	83	130	33	.2	8	.12	15	.13	23
MAY 16...	84	.68	102	290	55	.4	10	.01	8.4	.03	12
JUNE 19...	160	.65	88	260	53	.3	8	.00	7.0	.07	11
JULY 22...	436	.68	96	290	56	.4	10	.00	10	.07	14
AUG. 18...	208	.68	103	280	48	.4	11	.00	13	.07	15
SEP. 24...	36	.51	98	280	57	.4	11	.00	15	.03	18
TIME WTD. AVG.	--	.66	85	266	49	.4	11	.20	12	.16	16

05376000 NORTH FORK WHITEWATER RIVER NEAR ELBA, MINN.

(Hydrologic bench-mark station)

LOCATION.--Lat 44°05'30", long 92°03'57", in sec.7, T.107 N., R.10 W., Winona County, at gaging station on left bank, 2.3 mi (3.7 km) upstream from Middle Fork, 2.4 mi (3.9 km) west of Elba, and 3.5 mi (5.6 km) upstream from confluence with South Fork.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPER-ATURE (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	INSTAN-TANEOUS DIS-CHARGE (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	DIS-SOLVED OXYGEN (MG/L) (00300)	CARBON DIOXIDE (CO2) (MG/L) (00405)	PH (UNITS) (00400)
NOV. 06...	1330	5.0	6.0	40	505	313	298	35.8	13.1	2.1	8.4
DEC. 02...	1445	-1.5	2.5	38	445	313	299	32.8	13.8	4.1	8.1
JAN. 09...	1230	-.5	3.0	38	530	308	297	31.6	13.0	4.0	8.1
FEB. 21...	1201	2.0	2.0	33	490	321	296	28.6	14.0	3.2	8.2
APR. 01...	1049	-13.0	2.5	38	405	306	294	31.4	13.8	4.0	8.1
28...	1545	10.0	7.0	427	330	208	189	240	10.4	14	7.3
JUNE 03...	1350	27.0	15.0	43	535	313	300	36.3	10.5	2.0	8.4
JULY 10...	1251	30.0	18.5	58	560	331	309	51.8	8.2	2.6	8.3
AUG. 07...	1350	25.0	17.5	43	500	315	302	36.6	10.5	2.5	8.3
SEP. 05...	1201	19.0	15.0	40	525	323	307	34.9	14.2	1.6	8.5

DATE	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	TOTAL IRON (FE) (UG/L) (01045)	TOTAL MAN-GANESE (MN) (UG/L) (01055)	ALKA-LINITY AS CACO3 (MG/L) (00410)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)
NOV. 06...	72	26	4.6	1.3	460	30	264	6.4	17	.2	2.4
DEC. 02...	73	25	4.7	1.6	40	50	263	6.5	16	.1	2.8
JAN. 09...	71	25	5.5	1.4	120	0	258	8.9	16	.1	2.6
FEB. 21...	70	27	4.8	1.2	190	40	259	7.3	17	.1	2.7
APR. 01...	68	26	5.0	2.1	80	60	256	7.6	17	.3	3.1
28...	45	12	4.1	5.5	55000	2400	140	8.4	20	.1	3.2
JUNE 03...	72	27	4.5	1.8	780	90	261	7.6	17	.1	2.8
JULY 10...	77	25	4.7	1.8	450	40	261	8.2	18	.1	3.2
AUG. 07...	76	26	5.7	2.0	430	60	253	9.9	17	.1	2.4
SEP. 05...	75	26	4.0	1.8	860	90	266	6.8	17	.1	2.7

DATE	TIME	TOTAL ARSENIC (AS) (UG/L) (01002)	TOTAL BARIUM (BA) (UG/L) (01007)	TOTAL CAD-MIUM (CD) (UG/L) (01027)	TOTAL CHRO-MIUM (CR) (UG/L) (01034)	TOTAL COPPER (CU) (UG/L) (01042)	CYANIDE (CN) (MG/L) (00720)	TOTAL LEAD (PB) (UG/L) (01051)	TOTAL MERCURY (HG) (UG/L) (71900)	TOTAL SELE-NIUM (SE) (UG/L) (01147)	TOTAL SILVER (AG) (UG/L) (01077)	TOTAL ZINC (ZN) (UG/L) (01092)
JUNE 03...	1350	1	0	<10	0	<10	.00	<100	.3	1	<10	0
SEP. 05...	1201	1	<100	<10	0	<10	.00	<100	.6	0	<10	7

05376000 NORTH FORK WHITEWATER RIVER NEAR ELBA, MINN.--Continued

(Hydrologic bench-mark station)

DRAINAGE AREA.--101 mi^2 (262 km^2).

PERIOD OF RECORD.--Chemical analyses: August 1967 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TOTAL PHOSPHORUS (P) (MG/L) (00665)	DISSOLVED SILICA (SIO2) (MG/L) (00955)	IMMEDIATE COLIFORM (COL. PER 100 ML) (31501)	FECAL COLIFORM (COL. PER 100 ML) (31616)	STREPTOCOCCI (COLONIES PER 100 ML) (31679)	DISSOLVED SOLIDS (TONS PER AC-FT) (70303)	PERCENT SATURATION (00301)	HARDNESS (CA,MG) (MG/L) (00900)	NONCARBONATE HARDNESS (MG/L) (00902)	SODIUM ADSORPTION RATIO (00931)	PERCENT SODIUM (00932)
NOV, 06...	.09	14	--	88	84	.43	108	280	14	.1	3
DEC, 02...	.15	14	814	82	826	.43	104	290	22	.1	3
JAN, 09...	.17	14	815	0	85	.42	99	280	22	.1	4
FEB, 21...	.17	13	10	2	6	.44	104	290	27	.1	4
APR, 01...	.15	14	68	0	2	.42	104	280	21	.1	4
28...	.59	9.3	25300	12700	70000	.28	88	160	22	.1	5
JUNE 03...	.16	13	400	840	855	.43	105	290	30	.1	3
JULY 16...	.23	17	600	280	430	.45	90	300	34	.1	3
AUG, 07...	.16	13	850	42	50	.43	113	300	44	.1	4
SEP, 05...	.18	17	3540	23	280	.44	100	290	29	.1	3

DATE	ALDRIN IN BOTTOM MATERIAL (UG/KG) (39333)	DDD IN BOTTOM MATERIAL (UG/KG) (39363)	DDE IN BOTTOM MATERIAL (UG/KG) (39368)	DDT IN BOTTOM MATERIAL (UG/KG) (39373)	DIELDRIN IN BOTTOM MATERIAL (UG/KG) (39383)	ENDRIN IN BOTTOM MATERIAL (UG/KG) (39393)	HEPTACHLOR IN BOTTOM MATERIAL (UG/KG) (39413)	HEPTACHLOR EPOXIDE IN BOTTOM MATERIAL (UG/KG) (39423)	LINDANE IN BOTTOM MATERIAL (UG/KG) (39343)	CHLORDANE IN BOTTOM MATERIAL (UG/KG) (39351)	TOXAPHENE IN BOTTOM MATERIAL (UG/KG) (39403)
SEP, 05...	.0	.0	.0	.0	.3	.0	.0	.0	.0	0	0

DATE	PCB IN BOTTOM MATERIAL (UG/KG) (39519)	TOTAL ALDRIN (UG/L) (39330)	TOTAL LINDANE (UG/L) (39340)	TOTAL CHLORDANE (UG/L) (39350)	TOTAL DDD (UG/L) (39360)	TOTAL DDE (UG/L) (39365)	TOTAL DDT (UG/L) (39370)	TOTAL DIELDRIN (UG/L) (39380)	TOTAL ENDRIN (UG/L) (39390)	TOTAL TOXAPHENE (UG/L) (39400)
SEP, 05...	0	.00	.00	.0	.00	.00	.00	.00	.00	0

DATE	TOTAL HEPTACHLOR (UG/L) (39410)	TOTAL HEPTACHLOR EPOXIDE (UG/L) (39420)	TOTAL PCB (UG/L) (39516)	TOTAL MALATHION (UG/L) (39530)	TOTAL PARATHION (UG/L) (39540)	TOTAL DIAZINON (UG/L) (39570)	TOTAL METHYL PARATHION (UG/L) (39600)	TOTAL 2,4-D (UG/L) (39730)	TOTAL 2,4,5-T (UG/L) (39740)	TOTAL SILVEX (UG/L) (39760)
SEP, 05...	.00	.00	.0	.00	.00	.00	.00	.00	.00	.00

05376000 NORTH FORK WHITEWATER RIVER NEAR ELBA, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	TEMPERATURE (DEG C)	INSTANTANEOUS DISCHARGE (CFS)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .002 MM	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .008 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	SUS. SED. FALL DIAM. % FINER THAN .125 MM
OCT.											
24...	1300	9.0	40	6	.65	--	--	--	--	--	--
DEC.											
02...	1600	3.0	39	13	1.4	--	--	--	--	--	--
JAN.											
09...	1155	3.0	38	14	1.4	--	--	--	--	--	--
FEB.											
21...	1201	2.0	33	9	.80	--	--	--	--	--	--
APR.											
01...	1130	2.5	38	8	.82	--	--	--	--	--	--
28...	1555	7.0	425	2130	2440	--	--	--	--	--	--
29...	1648	10.0	140	260	98	--	--	--	--	--	--
JUNE											
03...	1508	15.0	43	41	4.8	--	--	--	--	--	--
JULY											
05...	2057	22.5	1630	4300	18900	44	62	75	86	98	100
06...	1220	22.0	435	2560	3010	51	66	81	91	99	--
16...	1425	18.5	57	377	58	--	--	--	--	--	--
AUG.											
07...	1230	17.5	43	40	4.6	--	--	--	--	--	--
SEP.											
05...	1345	15.0	40	39	4.2	--	--	--	--	--	--

DATE	TIME	DISSOLVED GROSS ALPHA AS U-NAT. (UG/L) (80030)	SUSPENDED GROSS ALPHA AS U-NAT. (UG/L) (80040)	DISSOLVED GROSS BETA AS CS-137 (PC/L) (03515)	SUSPENDED GROSS BETA AS CS-137 (PC/L) (03516)	DISSOLVED GROSS BETA AS SR90 /Y90 (PC/L) (80050)	SUSPENDED GROSS BETA AS SR90 /Y90 (PC/L) (80060)	DISSOLVED RA-226 (RADON METHOD) (PC/L) (09511)	DISSOLVED NATURAL URANIUM (U) (UG/L) (22703)	TOTAL FILTRABLE RESIDUE (MG/L) (00515)	TOTAL NONFILTRABLE RESIDUE (MG/L) (00530)
SEP.											
05...	1201	3.5	1.8	5.1	.9	4.1	.8	.05	.8	320	20

05378500 MISSISSIPPI RIVER AT WINONA, MINN.

LOCATION.--Lat 44°03'20", long 91°38'15", in sec.23, T.107 N., R.7 W., Winona County, at gaging station on right bank at Winona pumping station in Winona, 9.5 mi (15.3 km) upstream from Trempealeau River and at mile 725.7 (1,167.7 km) upstream from Ohio River.

DRAINAGE AREA.--59,200 mi² (153,500 km²), approximately.

PERIOD OF RECORD.--Chemical analyses: October 1963 to current year (partial record some years).
Sediment records: April 1965.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPER-ATURE (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	INSTAN-TANEOUS DIS-CHARGE (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	VOLA-TILE FILT-RABLE RESIDUE (MG/L) (00520)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	TUR-BID-ITY (JTU) (00070)	COLOR (PLAT-INUM-COBALT UNITS) (00080)	DIS-SOLVED OXYGEN (MG/L) (00300)
NOV. 07...	1430	13.0	8.5	24300	310	184	169	78	12100	10	20	--
DEC. 03...	1245	-1.5	.5	14400	270	201	177	82	7810	3	20	--
JAN. 08...	1300	1.0	.5	14100	320	198	183	72	7540	3	30	--
FEB. 20...	1700	2.0	.2	16800	315	230	194	92	10400	3	30	--
APR. 01...	1630	-7.0	.5	27600	315	201	185	81	15000	--	20	12.9
29...	1100	14.0	7.0	165000	285	172	165	70	76600	31	45	10.2
JUNE 09...	1000	16.0	20.5	48500	330	201	188	--	26300	16	--	8.2
JULY 10...	0915	31.0	25.0	47500	320	210	175	88	26900	--	70	7.0
AUG. 06...	1530	--	25.0	17500	320	211	186	102	9970	--	50	--
SEP. 03...	1500	26.0	22.0	22600	285	174	160	83	10600	15	40	7.4

NOV. 7, 1974
1430 HOURS

IDENTIFICATION OF PHYTOPLANKTON

38,000 CELLS/ML

	_ORGANISM__NAME	_COMMON__NAME	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...MICRACTINIACEAE			
	....MICRACTINIUM		320	1
	...SCENEDESMACEAE			
	....ACTINASTRUM		640	2
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
D	....CYCLOTELLA		19,000	50
	....MELOSIRA		2,700	7
L	....STEPHANODISCUS			0
	..PENNALES	PENNATE		
	...FRAGILARIACEAE			
L	....SYNEDRA			0
	...NAVICULACEAE	NAVICULOID		
L	....NAVICULA			0
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..CHROOCOCCALES	COCCOID		
	...CHROOCOCCACEAE			
	....ANACYSTIS		640	2
	..OSCILLATORIALES	FILAMENTOUS		
	...OSCILLATORIACEAE			
D	....LYNGBYA		6,400	17
D	....OSCILLATORIA		8,000	21

NOTE: D - DOMINANT ORGANISM; GREATER OR EQUAL TO 15%
L - LESS THEN 1%; MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 1.118
CLASS 1.118
ORDER 1.266
FAMILY 1.296
GENERA 2.000

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05378500 MISSISSIPPI RIVER AT WINONA, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	CARBON DIOXIDE (CO2) (MG/L) (00405)	PH (UNITS) (00400)	DISSOLVED CALCIUM (CA) (MG/L) (00915)	DISSOLVED MAGNESIUM (MG) (MG/L) (00925)	DISSOLVED SODIUM (NA) (MG/L) (00930)	DISSOLVED POTASSIUM (K) (MG/L) (00935)	ALKALINITY AS CACO3 (MG/L) (00410)	DISSOLVED CHLORIDE (CL) (MG/L) (00940)	DISSOLVED SULFATE (SO4) (MG/L) (00945)	DISSOLVED FLUORIDE (F) (MG/L) (00950)	TOTAL KJELDAHL NITROGEN (N) (MG/L) (00625)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)
NOV.												
07...	.3	9.0	37	12	9.7	1.8	131	11	16	.2	1.3	.22
DEC.												
03...	2.0	8.1	38	13	8.4	2.0	128	9.1	15	.1	.75	.48
JAN.												
08...	13	7.3	41	13	8.5	1.9	129	12	18	.1	.84	.58
FEB.												
20...	4.4	7.8	37	15	10	1.9	142	15	18	.2	.71	.73
APR.												
01...	2.6	8.0	36	15	9.8	2.2	133	12	18	.3	.92	.81
29...	5.5	7.5	31	11	4.5	2.8	89	7.3	25	.1	1.2	2.1
JUNE												
05...	1.9	8.1	40	15	7.4	3.2	123	9.1	33	.1	4.2	.73
JULY												
10...	1.5	8.2	39	13	5.6	2.2	121	7.2	21	.1	1.3	.89
AUG.												
06...	1.1	8.4	42	14	6.4	2.2	135	9.1	20	.1	1.3	.35
SEP.												
03...	.9	8.4	33	12	7.2	2.2	112	9.1	15	.2	.81	.56

DEC. 3. 1974
1245 HOURS

IDENTIFICATION OF PHYTOPLANKTON

13.000 CELLS/ML

	_ORGANISM__NAME	_COMMON__NAME	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...MICRACTINIACEAE			
	....MICRACTINIUM		670	5
	...OOCYSTACEAE			
	....ANKISTRODESMUS		170	1
	...SCENEDESMACEAE			
	....ACTINASTRUM		670	5
	....SCENEDESMUS		330	3
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
D	....CYCLOTELLA		6.900	52
	..PENNALES	PENNATE		
	...FRAGILARIACEAE			
	....ASTERIONELLA		670	5
	....SYNEDRA		170	1
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..OSCILLATORIALES	FILAMENTOUS		
	...OSCILLATORIACEAE			
D	....LYNGBYA		3.800	28

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER . 200-X MICROSCOPE
DIVERSITY INDICES. BASED ON ACTUAL COUNTS:
PHYL/DIV 1.367
CLASS 1.367
ORDER 1.654
FAMILY 1.837
GENERA 1.952

05378500 MISSISSIPPI RIVER AT WINONA, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TOTAL NITRO- GEN (N) (MG/L) (00600)	TOTAL PHOS- PHORUS (P) (MG/L) (00665)	DIS- SOLVED SILICA (SIO2) (MG/L) (00955)	FECAL COLI- FORM (COL. PER 100 ML) (31616)	STREP- TOCOCCI (COL- ONIES PER 100 ML) (31679)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303)	PER- CENT SATUR- ATION (00301)	HARD- NESS (CA,MG) (MG/L) (00900)	NON- CAR- BONATE HARD- NESS (MG/L) (00902)	SODIUM AD- SORP- TION RATIO (00931)	PERCENT SODIUM (00932)	TOTAL NITRO- GEN (NO3) (MG/L) (71887)
NOV.												
07...	1.5	.16	3.0	8100	--	.25	--	140	11	.4	13	6.7
DEC.												
03...	1.2	.15	14	31	812	.27	--	150	20	.3	11	5.4
JAN.												
08...	1.4	.16	11	810	812	.27	--	160	27	.3	10	6.3
FEB.												
20...	1.4	.17	12	16	19	.31	--	150	12	.4	12	6.4
APR.												
01...	1.7	.18	12	22	4	.27	91	150	19	.3	12	7.7
29...	3.3	.16	10	380	850	.23	86	120	33	.2	7	15
JUNE												
05...	4.9	.13	6.6	800	1600	.27	93	160	39	.3	9	22
JULY												
18...	2.2	.25	14	65	--	.29	85	150	30	.2	7	9.7
AUG.												
06...	1.7	.20	11	120	78	.29	--	160	27	.2	8	7.3
SEP.												
03...	1.4	.21	14	130	100	.24	86	130	19	.3	10	6.1

JAN. 8, 1975
1300 HOURS

IDENTIFICATION OF PHYTOPLANKTON

4,500 CELLS/ML

	_ORGANISM__NAME_______________	_COMMON__NAME______	CELLS/ML	PER_CENT
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
D	....CYCLOTELLA		4,000	91
	....MELOSIRA		83	2
	..PENNALES	PENNATE		
	...FRAGILARIACEAE			
	....ASTERIONELLA		250	6
	...NAVICULACEAE	NAVICULOID		
	....NAVICULA		83	2

NOTE: D - DOMINANT ORGANISM; GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
ORDER 0.381
FAMILY 0.441
GENERA 0.572

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	DIS- SOLVED ARSENIC (AS) (UG/L) (01000)	SUS- PENDED ARSENIC (AS) (UG/L) (01001)	TOTAL ARSENIC (AS) (UG/L) (01002)	DIS- SOLVED CAD- MIUM (CD) (UG/L) (01025)	SUS- PENDED CAD- MIUM (CD) (UG/L) (01026)	TOTAL CAD- MIUM (CD) (UG/L) (01027)	DIS- SOLVED CHRO- MIUM (CR) (UG/L) (01030)	SUS- PENDED CHRO- MIUM (CR) (UG/L) (01031)	TOTAL CHRO- MIUM (CR) (UG/L) (01034)	DIS- SOLVED COBALT (CO) (UG/L) (01035)	SUS- PENDED COBALT (CO) (UG/L) (01036)
NOV.												
07...	1430	--	--	--	--	--	--	--	--	--	--	--
DEC.												
03...	1245	--	--	--	--	--	--	--	--	--	--	--
JAN.												
08...	1300	--	--	--	--	--	--	--	--	--	--	--
FEB.												
20...	1700	--	--	--	--	--	--	--	--	--	--	--
APR.												
01...	1630	--	--	--	--	--	--	--	--	--	--	--
29...	1100	--	--	--	--	--	--	--	--	--	--	--
JUNE												
05...	1000	0	0	0	0	<10	<10	0	0	0	0	<50
AUG.												
06...	1530	2	1	3	0	20	20	0	10	10	0	<50
SEP.												
03...	1500	--	--	--	--	--	--	--	--	--	--	--

05378500 MISSISSIPPI RIVER AT WINONA, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TOTAL COBALT (CO) (UG/L) (01037)	DIS-SOLVED COPPER (CU) (UG/L) (01040)	SUS-PENDED COPPER (CU) (UG/L) (01041)	TOTAL COPPER (CU) (UG/L) (01042)	DIS-SOLVED IRON (FE) (UG/L) (01046)	TOTAL IRON (FE) (UG/L) (01045)	DIS-SOLVED LEAD (PB) (UG/L) (01049)	SUS-PENDED LEAD (PB) (UG/L) (01050)	TOTAL LEAD (PB) (UG/L) (01051)	DIS-SOLVED MAN-GANESE (MN) (UG/L) (01056)	SUS-PENDED MAN-GANESE (MN) (UG/L) (01054)
NOV.											
07...	--	--	--	--	--	440	--	--	--	--	--
DEC.											
03...	--	--	--	--	--	280	--	--	--	--	--
JAN.											
08...	--	--	--	--	--	490	--	--	--	--	--
FEB.											
20...	--	--	--	--	--	330	--	--	--	--	--
APR.											
01...	--	--	--	--	--	580	--	--	--	--	--
29...	--	--	--	--	--	2500	--	--	--	--	--
JUNE											
05...	<50	6	4	10	100	980	4	<96	<100	10	160
AUG.											
06...	<50	3	17	20	60	600	3	97	100	20	120
SEP.											
03...	--	--	--	--	--	930	--	--	--	--	--

FEB. 20. 1975
1700 HOURS

IDENTIFICATION OF PHYTOPLANKTON

330 CELLS/ML

	_ORGANISM__NAME_______________	_COMMON__NAME______	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
	....ANKISTRODESMUS		27	8
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
D	....CYCLOTELLA		140	42
	....MELOSIRA		27	8
	....STEPHANODISCUS		14	4
	..PENNALES	PENNATE		
	...ACHNANTHACEAE			
	....COCCONEIS		14	4
	...DIATOMACEAE			
	....DIATOMA		14	4
	...FRAGILARIACEAE			
D	....SYNEDRA		55	17
	...NAVICULACEAE	NAVICULOID		
	....NAVICULA		41	13

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER . 200-X MICROSCOPE
DIVERSITY INDICES. BASED ON ACTUAL COUNTS:
PHYL/DIV 0.414
CLASS 0.414
ORDER 1.309
FAMILY 1.966
GENERA 2.503

05378500 MISSISSIPPI RIVER AT WINONA, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TOTAL MAN-GANESE (MN) (UG/L) (01055)	DIS-SOLVED MERCURY (HG) (UG/L) (71890)	SUS-PENDED MERCURY (HG) (UG/L) (71895)	TOTAL MERCURY (HG) (UG/L) (71900)	DIS-SOLVED SELE-NIUM (SE) (UG/L) (01145)	SUS-PENDED SELE-NIUM (SE) (UG/L) (01146)	TOTAL SELE-NIUM (SE) (UG/L) (01147)	DIS-SOLVED ZINC (ZN) (UG/L) (01090)	SUS-PENDED ZINC (ZN) (UG/L) (01091)	TOTAL ZINC (ZN) (UG/L) (01092)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)
NOV.,											
07...	150	--	--	--	--	--	--	--	--	--	--
DEC.,											
03...	90	--	--	--	--	--	--	--	--	--	--
JAN.,											
08...	70	--	--	--	--	--	--	--	--	--	--
FEB.,											
20...	140	--	--	--	--	--	--	--	--	--	--
APR.,											
01...	110	--	--	--	--	--	--	--	--	--	--
29...	150	--	--	--	--	--	--	--	--	--	--
JUNE											
05...	170	.0	.0	.0	0	0	0	10	10	20	15
AUG.,											
06...	140	.1	.0	.1	0	0	0	0	60	60	15
SEP.,											
03...	160	--	--	--	--	--	--	--	--	--	--

APR. 29, 1975
1100 HOURS

IDENTIFICATION OF PHYTOPLANKTON

8,000 CELLS/ML

ORGANISM NAME	COMMON NAME	CELLS/ML	PER CENT
CHLOROPHYTA	GREEN ALGAE		
.CHLOROPHYCEAE			
..VOLVOCALES			
...CHLAMYDOMONADACEAE			
....CHLAMYDOMONAS		220	3
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..CENTRALES	CENTRIC		
...COSCINODISCACEAE			
D ....CYCLOTELLA		2,700	33
D ....MELOSIRA		2,900	36
....STEPHANODISCUS		220	3
..PENNALES	PENNATE		
...CYMBELLACEAE			
....CYMBELLA		220	3
...NAVICULACEAE	NAVICULOID		
....NAVICULA		890	11
...NITZSCHIACEAE			
....NITZSCHIA		890	11

NOTE: D = DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.183
CLASS 0.183
ORDER 0.983
FAMILY 1.331
GENERA 2.194

05378500 MISSISSIPPI RIVER AT WINONA, MINN.--Continued

JULY 18, 1975
0915 HOURS

IDENTIFICATION OF PHYTOPLANKTON

15.000 CELLS/ML

	_ORGANISM__NAME_____________	_COMMON__NAME______	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
L	....DICTYOSPHAERIUM			0
L	....OOCYSTIS			0
	...SCENEDESMACEAE			
L	....ACTINASTRUM			0
	....SCENEDESMUS		860	6
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...CHAETOCERACEAE			
	....ATTHEYA		210	1
	...COSCINODISCACEAE			
D	....CYCLOTELLA		3.600	25
D	....MELOSIRA		8.800	60
	..PENNALES	PENNATE		
	...FRAGILARIACEAE			
L	....SYNEDRA			0
	...NAVICULACEAE	NAVICULOID		
	....NAVICULA		210	1
	...NITZSCHIACEAE			
	....NITZSCHIA		640	4
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..CHROOCOCCALES	COCCOID		
	...CHROOCOCCACEAE			
L	....AGMENELLUM			0
L	....ANACYSTIS			0
	..OSCILLATORIALES	FILAMENTOUS		
	...OSCILLATORIACEAE			
L	....OSCILLATORIA			0
	EUGLENOPHYTA	EUGLENOIDS		
	.CRYPTOPHYCEAE	CRYPTOMONADS		
	..CRYPTOMONIDALES			
	...CRYPTOMONODACEAE			
	....CRYPTOMONAS		210	1
	.EUGLENOPHYCEAE			
	..EUGLENALES			
	...EUGLENACEAE			
L	....EUGLENA			0

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
L - LESS THEN 1%: MAY NOT HAVE BEEN ACTUALLY COUNTED
SAMPLING METHOD: PLASTIC SLIDES. RANDOM
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER . 200-X MICROSCOPE
DIVERSITY INDICES. BASED ON ACTUAL COUNTS:

PHYL/DIV 0.432
CLASS 0.432
ORDER 0.748
FAMILY 0.903
GENERA 1.648

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

PERIPHYTON

Date	Length of exposure (days)	Biomass (g/m²) Dry weight	Biomass (g/m²) Ash weight	Chlorophyll a (mg/m²)	Chlorophyll b (mg/m²)	Biomass pigment ratio	Sampling method
Dec 03	26	2.3	0.8	0.0	0.0	0.0	Polyethylene strip
Aug 06	19	6300	30	0.4	0.5	8200	Polyethylene strip
Sep 03	28	51	41	90	7.6	110	Polyethylene strip

AUG. 12, 1975
1530 HOURS

IDENTIFICATION OF PHYTOPLANKTON

5,800 CELLS/ML

	_ORGANISM__NAME_______________	_COMMON__NAME_______	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...HYDRODICTYACEAE			
L	....PEDIASTRUM			0
	...OOCYSTACEAE			
	....ANKISTRODESMUS		71	1
	...SCENEDESMACEAE			
L	....ACTINASTRUM			0
	....SCENEDESMUS		140	2
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
D	....CYCLOTELLA		860	15
D	....MELOSIRA		4,100	72
L	....STEPHANODISCUS			0
	..PENNALES	PENNATE		
	...FRAGILARIACEAE			
	....SYNEDRA		71	1
	...GOMPHONEMATACEAE			
L	....GOMPHONEMA			0
	...NAVICULACEAE	NAVICULOID		
	....NAVICULA		71	1
	...NITZSCHIACEAE			
	....NITZSCHIA		140	2
	.CHRYSOPHYCEAE	YELLOW-BROWN ALGAE		
	..CHRYSOMONADALES			
	...OCHROMONADACEAE			
	....OCHROMONAS		71	1
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..OSCILLATORIALES	FILAMENTOUS		
	...OSCILLATORIACEAE			
L	....OSCILLATORIA			0
	EUGLENOPHYTA	EUGLENOIDS		
	.CRYPTOPHYCEAE	CRYPTOMONADS		
	..CRYPTOMONIDALES			
	...CRYPTOMONODACEAE			
	....CRYPTOMONAS		140	2
	.EUGLENOPHYCEAE			
	..EUGLENALES			
	...EUGLENACEAE			
	....EUGLENA		71	1

NOTE: D = DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
L = LESS THEN 1%: MAY NOT HAVE BEEN ACTUALLY COUNTED
SAMPLING METHOD: PLASTIC SLIDES, RANDOM
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:

PHYL/DIV	0.455
CLASS	0.584
ORDER	0.861
FAMILY	0.969
GENERA	1.540

05378500 MISSISSIPPI RIVER AT WINONA, MINN.--Continued

SEP. 4, 1975
1500 HOURS

IDENTIFICATION OF PHYTOPLANKTON

23,000 CELLS/ML

_ORGANISM__NAME_______________	_COMMON__NAME______	CELLS/ML	PER_CENT
CHLOROPHYTA	GREEN ALGAE		
.CHLOROPHYCEAE			
..CHLOROCOCCALES			
...HYDRODICTYACEAE			
....PEDIASTRUM		3,200	14
...SCENEDESMACEAE			
....SCENEDESMUS		1,200	5
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..CENTRALES	CENTRIC		
...COSCINODISCACEAE			
....CYCLOTELLA		290	1
# ....MELOSIRA		4,000	17
CYANOPHYTA	BLUE-GREEN ALGAE		
.MYXOPHYCEAE			
..OSCILLATORIALES	FILAMENTOUS		
...NOSTOCACEAE			
# ....APHANIZOMENON		14,000	62

NOTE: # - DOMINANT ORGANISM, GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYLUM/DIV 1.324
CLASS 1.324
ORDER 1.324
FAMILY 1.448
GENERA 1.553

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	DECEMBER			JANUARY			FEBRUARY		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	17400	---	---	14700	---	---	15400	---	---
2	16500	---	---	14500	---	---	15000	---	---
3	14400	21	816	14300	---	---	15200	---	---
4	14200	---	---	13700	---	---	15300	---	---
5	13800	---	---	13400	---	---	15300	---	---
6	14200	---	---	13200	---	---	15600	---	---
7	16100	---	---	13700	---	---	15600	---	---
8	16300	---	---	14100	7	266	15500	---	---
9	15700	---	---	14400	---	---	15200	---	---
10	11300	---	---	14400	---	---	15000	---	---
11	9100	---	---	14700	---	---	15000	---	---
12	10900	---	---	14700	---	---	15000	---	---
13	13600	---	---	14300	---	---	14900	---	---
14	18000	---	---	13600	---	---	14900	---	---
15	21000	---	---	13400	---	---	15000	---	---
16	21700	---	---	13400	---	---	15100	---	---
17	19700	---	---	13200	---	---	16100	---	---
18	16300	---	---	13200	---	---	17000	---	---
19	15400	---	---	13200	---	---	16700	---	---
20	15400	---	---	13300	---	---	16700	2	90
21	15500	---	---	13500	---	---	16700	---	---
22	15600	---	---	14200	---	---	17300	---	---
23	15600	---	---	14500	---	---	17700	---	---
24	15600	---	---	15300	---	---	18400	---	---
25	15300	---	---	16300	---	---	18500	---	---
26	13300	---	---	16600	---	---	18300	---	---
27	13000	---	---	16600	---	---	18300	---	---
28	13400	---	---	16500	---	---	17900	---	---
29	14000	---	---	16500	---	---	---	---	---
30	15200	---	---	16400	---	---	---	---	---
31	14900	---	---	16200	---	---	---	---	---

05378500 MISSISSIPPI RIVER AT WINONA, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	TEMPER-ATURE (DEG C)	INSTAN-TANEOUS DIS-CHARGE (CFS)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .002 MM	SUS. SED. FALL DIAM. % FINER THAN .004 MM
APR. 25...	1710	8.0	115000	62	19300	38	49

DATE	SUS. SED. FALL DIAM. % FINER THAN .008 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	SUS. SED. FALL DIAM. % FINER THAN .125 MM	SUS. SED. FALL DIAM. % FINER THAN .250 MM	SUS. SED. FALL DIAM. % FINER THAN .500 MM
APR. 25...	64	80	94	95	96	100

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL			MAY			JUNE		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	27200	9	661	165000	---	---	50100	---	---
2	25700	---	---	165000	---	---	48500	---	---
3	24500	---	---	162000	---	---	47900	---	---
4	24900	---	---	157000	---	---	46600	36	4530
5	25300	---	---	152000	---	---	46800	---	---
6	25600	---	---	147000	32	12700	46400	---	---
7	24800	---	---	142000	---	---	45300	---	---
8	24700	---	---	138000	---	---	40500	---	---
9	24400	---	---	133000	---	---	38000	---	---
10	25200	---	---	127000	---	---	36700	---	---
11	27100	---	---	119000	---	---	34300	---	---
12	31300	---	---	110000	---	---	36400	---	---
13	32500	---	---	103000	---	---	40500	---	---
14	34700	---	---	94100	---	---	43500	---	---
15	40200	---	---	86000	---	---	45300	---	---
16	44400	---	---	79400	---	---	45300	---	---
17	46400	---	---	73000	---	---	46900	---	---
18	50100	---	---	69300	---	---	51400	---	---
19	52700	---	---	66700	---	---	54800	---	---
20	56900	---	---	62800	---	---	55000	---	---
21	61000	---	---	61200	---	---	55600	---	---
22	69100	---	---	60000	---	---	57600	---	---
23	80900	---	---	58400	---	---	58800	---	---
24	92300	---	---	55500	---	---	59400	---	---
25	107000	62	17900	54200	---	---	62100	---	---
26	116000	---	---	53000	---	---	63800	---	---
27	126000	---	---	52400	---	---	64500	---	---
28	143000	---	---	52300	---	---	65100	---	---
29	154000	---	---	53400	---	---	65500	---	---
30	160000	---	---	53200	---	---	65700	---	---
31	---	---	---	51900	---	---	---	---	---

05378500 MISSISSIPPI RIVER AT WINONA, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	NUMBER OF SAM- PLING POINTS	INSTAN- TANEOUS DIS- CHARGE (CFS)	BED MAT. FALL DIAM. % FINER THAN .062 MM	BED MAT. FALL DIAM. % FINER THAN .125 MM	BED MAT. FALL DIAM. % FINER THAN .250 MM	BED MAT. FALL DIAM. % FINER THAN .500 MM	BED MAT. FALL DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM
SEP. 08...	1400	1	22600	1	2	25	55	93	96	98

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	66400	---	---	23300	---	---	26900	---	---
2	66700	---	---	24000	---	---	25000	---	---
3	66500	---	---	25100	---	---	25200	26	1770
4	66100	---	---	24400	---	---	22800	---	---
5	66700	---	---	23100	---	---	21600	---	---
6	70500	---	---	21800	25	1470	20500	---	---
7	73600	---	---	18600	---	---	20000	---	---
8	72200	---	---	17700	---	---	18700	---	---
9	70400	---	---	17600	---	---	19200	---	---
10	68900	---	---	19200	---	---	16200	---	---
11	67200	---	---	19000	---	---	19100	---	---
12	64600	---	---	19100	---	---	25500	---	---
13	61600	---	---	17800	---	---	28900	---	---
14	58700	---	---	17300	---	---	30300	---	---
15	56100	---	---	16900	---	---	30000	---	---
16	53600	---	---	17700	---	---	24700	---	---
17	49600	36	4820	17200	---	---	22700	---	---
18	47700	---	---	16300	---	---	21700	---	---
19	44000	---	---	16100	---	---	21700	---	---
20	41600	---	---	17100	---	---	21600	---	---
21	40300	---	--	19000	---	---	21900	---	---
22	35200	---	---	22700	---	---	21800	---	---
23	33700	---	---	28500	---	---	21800	40	2350
24	28600	---	---	43100	---	---	21900	42	2480
25	28500	---	---	36200	---	---	21800	52	3060
26	28500	---	---	30000	---	---	22000	58	3450
27	27600	---	---	27500	---	---	21900	43	2540
28	26500	---	---	25700	---	---	21900	40	2370
29	22700	---	---	27100	---	---	21700	43	2520
30	20400	---	---	26200	---	---	19700	42	2230
31	21600	---	---	26500	---	---	---	---	---

05476000 DES MOINES RIVER AT JACKSON, MINN.

LOCATION.--Lat 43°37'10", long 94°59'10", in SE¼SW¼ sec.24, T.102 N., R.35 W., Jackson County, 1,000 ft (305 m) upstream from gaging station, on right bank in storage room of city powerplant in Jackson.

DRAINAGE AREA.--1,220 mi^2 (3,160 km^2), approximately.

PERIOD OF RECORD.--Chemical analyses: October 1972 to current year.
Water temperatures: Water year 1973-1975 (partial-record station).
Sediment: Water years 1968-1971, 1973-1975 (partial-record station).

REMARKS.--Miscellaneous chemical and sediment data published for water years 1968-72.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPER- ATURE (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L) (70301)	VOLA- TILE FILT- RABLE RESIDUE (MG/L) (00520)	DIS- SOLVED SOLIDS (TONS PER DAY) (70302)	COLOR (PLAT- INUM- COBALT UNITS) (00080)	CARBON DIOXIDE (CO2) (MG/L) (00405)
OCT.											
01...	1200	8.5	9.5	3.1	700	558	519	--	4.67	20	.9
31...	0930	17.0	12.5	14	910	591	569	155	23.5	20	--
NOV.											
27...	1000	.0	1.5	12	1000	692	633	172	23.5	20	2.6
DEC.											
30...	1700	10.5	1.0	7.0	1200	929	852	213	17.7	8	6.1
FEB.											
05...	1030	-15.0	.0	2.6	1200	812	768	225	5.74	5	23
MAR.											
11...	1030	-2.0	.0	4.9	1310	820	809	178	11.0	20	18
APR.											
14...	1900	2.0	.0	670	650	461	415	111	834	15	3.7
MAY											
23...	0845	15.5	20.5	375	850	640	593	122	648	25	7.2
JUNE											
24...	1500	28.0	23.0	710	865	651	569	184	1250	40	31
AUG.											
04...	1415	31.0	27.0	105	967	724	689	189	205	35	2.5
SEP.											
08...	1430	21.0	21.5	15	900	665	610	139	27.8	28	1.0

DATE	PH (UNITS) (00400)	DIS- SOLVED CAL- CIUM (CA) (MG/L) (00915)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L) (00925)	DIS- SOLVED SODIUM (NA) (MG/L) (00930)	DIS- SOLVED PO- TAS- SIUM (K) (MG/L) (00935)	ALKA- LINITY AS CACO3 (MG/L) (00410)	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940)	DIS- SOLVED SULFATE (SO4) (MG/L) (00945)	DIS- SOLVED FLUO- RIDE (F) (MG/L) (00950)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625)
OCT.										
01...	8.7	81	47	31	4.5	220	40	170	.6	--
31...	--	92	41	44	5.4	261	59	160	.4	1.3
NOV.										
27...	8.3	110	47	45	3.1	262	57	200	.3	.77
DEC.										
30...	8.0	150	62	50	5.8	312	69	310	.4	1.9
FEB.										
05...	7.5	140	53	47	5.7	370	63	210	.4	2.7
MAR.										
11...	7.6	130	49	82	6.9	376	120	170	.6	3.0
APR.										
14...	7.9	86	30	11	3.6	150	20	160	.3	2.1
MAY										
23...	7.6	98	51	24	5.4	148	31	290	.5	1.7
JUNE										
24...	7.1	110	45	16	3.8	197	26	230	.6	2.7
AUG.										
04...	8.2	100	57	37	5.6	199	55	300	.7	2.3
SEP.										
08...	8.5	86	55	43	7.0	160	64	260	.5	2.6

05476000 DES MOINES RIVER AT JACKSON, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL NITRO- GEN (N) (MG/L) (00600)	TOTAL PHOS- PHORUS (P) (MG/L) (00665)	DIS- SOLVED SILICA (SIO2) (MG/L) (00955)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303)	HARD- NESS (CA,MG) (MG/L) (00900)	NON- CAR- BONATE HARD- NESS (MG/L) (00902)	SODIUM AD- SORP- TION RATIO (00931)	PERCENT SODIUM (00932)	TOTAL NITRO- GEN (NO3) (MG/L) (71887)
OCT.										
01...	.02	--	.21	12	.76	400	180	.7	14	--
31...	.04	1.3	.25	10	.80	400	140	1.0	19	5.9
NOV.										
27...	.96	1.7	.42	13	.94	470	210	.9	17	7.7
DEC.										
30...	1.4	3.3	.49	17	1.26	630	320	.9	15	15
FEB.										
05...	.39	3.1	.39	26	1.10	570	200	.9	15	14
MAR.										
11...	.41	3.4	.65	24	1.13	550	150	1.6	25	15
APR.										
14...	4.7	6.8	.55	14	.65	340	190	.3	7	30
MAY										
23...	1.3	3.0	.08	4.7	.87	450	310	.5	10	13
JUNE										
24...	7.6	10	.17	19	.89	460	260	.3	7	46
AUG.										
04...	.01	2.3	.31	14	.98	480	290	.7	14	10
SEP.										
08...	.01	2.6	.19	5.8	.90	440	280	.9	17	12

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER			NOVEMBER			DECEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	3.0	34	.28	11	---	---	12	---	---
2	3.0	---	---	15	---	---	11	---	---
3	3.7	---	---	15	---	---	10	---	---
4	7.0	---	---	12	---	---	9.2	---	---
5	6.8	---	---	11	---	---	8.8	---	---
6	7.5	---	---	9.5	---	---	8.8	---	---
7	7.1	---	---	9.3	---	---	8.8	---	---
8	6.7	---	---	9.9	---	---	8.3	---	---
9	4.3	---	---	12	---	---	7.8	---	---
10	5.0	---	---	13	---	---	6.3	---	---
11	6.4	---	---	13	---	---	6.1	---	---
12	4.4	---	---	11	---	---	6.9	---	---
13	11	---	---	11	---	---	7.8	---	---
14	12	---	---	10	---	---	9.0	---	---
15	6.4	---	---	8.8	---	---	9.0	---	---
16	7.1	---	---	8.8	---	---	9.0	---	---
17	6.2	---	---	9.1	---	---	9.0	---	---
18	6.8	---	---	11	---	---	8.8	---	---
19	6.8	---	---	13	---	---	6.8	---	---
20	6.3	---	---	24	---	---	6.8	---	---
21	6.2	---	---	26	---	---	6.8	---	---
22	6.6	---	---	22	---	---	8.8	---	---
23	5.1	---	---	21	---	---	8.8	---	---
24	6.3	---	---	19	---	---	8.4	---	---
25	5.4	---	---	15	---	---	6.9	---	---
26	5.3	---	---	12	---	---	6.9	---	---
27	9.3	---	---	13	18	.63	6.9	---	---
28	7.9	---	---	12	---	---	6.9	---	---
29	10	---	---	12	---	---	7.0	---	---
30	11	---	---	12	---	---	7.0	34	.64
31	13	140	4.9	---	---	---	7.0	---	---

05476000 DES MOINES RIVER AT JACKSON, MINN.--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	JANUARY MEAN DISCHARGE (CFS)	JANUARY MEAN CONCEN-TRATION (MG/L)	JANUARY SEDIMENT DISCHARGE (TONS/DAY)	FEBRUARY MEAN DISCHARGE (CFS)	FEBRUARY MEAN CONCEN-TRATION (MG/L)	FEBRUARY SEDIMENT DISCHARGE (TONS/DAY)	MARCH MEAN DISCHARGE (CFS)	MARCH MEAN CONCEN-TRATION (MG/L)	MARCH SEDIMENT DISCHARGE (TONS/DAY)
1	7.0			2.5	---	---	3.3	---	---
2	7.0			2.5	---	---	3.5	---	---
3	7.0			2.6	---	---	3.6	---	---
4	7.0			2.6	---	---	3.7	---	---
5	7.0			2.6	214	1.5	3.8	---	---
6	6.9			2.6	---	---	3.9	---	---
7	6.9			2.6	---	---	4.0	---	---
8	6.8			2.6	---	---	4.1	---	---
9	6.8			2.6	---	---	4.3	---	---
10	5.4			2.6	---	---	4.6	---	---
11	3.5			2.6	---	---	4.9	82	1.1
12	2.5			2.6	---	---	5.2	---	---
13	2.0			2.6	---	---	5.2	---	---
14	1.9			2.6	---	---	6.0	---	---
15	1.9			2.6	---	---	5.2	---	---
16	1.9			2.6	---	---	5.2	---	---
17	1.9			2.6	---	---	9.0	---	---
18	1.9			2.6	---	---	7.2	---	---
19	1.9			2.6	---	---	20	---	---
20	1.9			2.6	---	---	75	---	---
21	1.9			2.7	---	---	115	40	12
22	1.9			2.8	---	---	115	---	---
23	1.9			3.3	---	---	120	---	---
24	2.1			8.2	---	---	110	---	---
25	2.3			3.3	---	---	100	---	---
26	2.4			3.0	---	---	95	---	---
27	2.4			3.0	---	---	85	---	---
28	2.4			5.6	---	---	72	---	---
29	2.4			---	---	---	62	---	---
30	2.4			---	---	---	60	---	---
31	2.4			---	---	---	54	---	---

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TEMPER-ATURE (DEG C)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
OCT.		
01...	9.5	750
31...	12.5	788
NOV.		
27...	1.5	966
DEC.		
30...	1.0	1128
FEB.		
05...	.0	841
MAR.		
11...	.0	1150
21...	.0	622
APR.		
11...	5.0	558
14...	.0	650
15...	1.5	666
APR.		
16...	5.0	576
17...	5.0	576
18...	5.0	651
19...	5.0	550
20...	6.0	550
21...	7.0	621
22...	7.0	621
23...	9.0	654
24...	9.0	733
25...	11.0	672
26...	10.0	712
27...	10.0	672
28...	11.0	637
29...	12.0	691
30...	10.0	691
MAY		
01...	11.0	756
02...	10.0	807
03...	14.0	781

05476000 DES MOINES RIVER AT JACKSON, MINN.--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL			MAY			JUNE		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	55	---	---	1140	133	409	327	143	126
2	51	---	---	1120	120	363	311	145	122
3	49	---	---	1120	128	387	292	---	---
4	58	---	---	1130	143	436	349	154	145
5	50	---	---	1080	155	452	306	---	---
6	91	---	---	961	155	402	291	---	---
7	130	---	---	893	139	335	266	---	---
8	188	---	---	864	112	261	251	---	---
9	196	---	---	856	79	183	250	---	---
10	212	---	---	823	56	124	253	---	---
11	279	29	22	833	56	126	268	---	---
12	320	---	---	794	45	96	267	---	---
13	446	---	---	743	42	84	264	---	---
14	652	164	289	695	42	79	270	---	---
15	706	184	351	652	38	67	325	140	123
16	858	223	517	591	38	61	347	138	129
17	1070	251	725	533	40	58	430	134	156
18	1100	188	558	494	43	57	409	130	144
19	1160	206	645	453	40	49	409	129	142
20	1150	202	627	417	38	43	400	129	139
21	1060	162	464	397	54	58	559	513	1010
22	1020	195	537	388	---	---	881	620	1470
23	1070	144	416	374	159	161	803	208	451
24	965	116	302	420	149	169	716	251	485
25	890	114	274	602	85	138	611	278	459
26	889	112	269	638	83	143	541	245	358
27	935	139	351	546	114	168	504	223	303
28	1050	172	488	468	118	149	466	220	277
29	1140	187	576	423	102	116	424	218	250
30	1160	175	548	383	118	122	393	205	218
31	---	---	---	348	135	127	---	---	---

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TEMPER-ATURE (DEG C)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
MAY		
04...	15.0	781
05...	17.0	691
06...	18.0	756
07...	15.0	733
08...	14.0	781
09...	15.0	896
10...	16.0	896
11...	15.0	896
12...	17.0	864
13...	17.0	807
14...	20.0	896
15...	18.0	864
16...	18.0	864
17...	20.0	931
18...	20.0	834
19...	22.0	896
20...	23.0	896
21...	24.0	896
22...	24.0	896
23...	23.0	813
24...	25.0	800
25...	23.0	790
26...	24.0	690
27...	20.0	680
28...	28.0	660
29...	17.0	740
30...	18.0	750
31...	18.0	700
JUNE		
01...	18.0	720
02...	21.0	680
04...	21.0	740
15...	21.0	740
16...	21.0	790
17...	20.0	710
18...	21.0	650
19...	25.0	800
20...	25.0	810
21...	22.0	535

05476000 DES MOINES RIVER AT JACKSON, MINN.--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	367	195	193	51	---	---	21	---	---
2	342	193	178	50	---	---	21	---	---
3	322	200	174	29	---	---	19	---	---
4	304	203	167	96	60	16	19	---	---
5	302	201	164	57	---	---	21	---	---
6	285	---	---	47	---	---	19	---	---
7	270	---	---	42	---	---	18	---	---
8	252	---	---	41	---	---	16	25	1.1
9	239	---	---	40	---	---	20	---	---
10	224	---	---	40	---	---	21	---	---
11	214	---	---	39	---	---	40	---	---
12	201	---	---	38	---	---	26	---	---
13	190	---	---	37	---	---	19	---	---
14	182	---	---	37	---	---	16	---	---
15	175	---	---	34	---	---	15	---	---
16	166	---	---	22	---	---	16	---	---
17	162	---	---	13	---	---	16	---	---
18	155	---	---	12	---	---	16	---	---
19	142	---	---	23	---	---	16	---	---
20	120	---	---	36	---	---	18	---	---
21	109	---	---	37	---	---	18	---	---
22	104	---	---	53	---	---	15	---	---
23	81	---	---	56	---	---	13	---	---
24	50	---	---	39	---	---	12	---	---
25	41	---	---	32	---	---	12	---	---
26	41	---	---	29	---	---	10	---	---
27	44	---	---	26	---	---	8.9	---	---
28	45	---	---	26	---	---	7.8	---	---
29	51	---	---	24	---	---	7.6	---	---
30	49	---	---	23	---	---	8.2	---	---
31	49	---	---	21	---	---	---	---	---

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)
JUNE		
22...	21.5	720
23...	23.0	800
24...	23.0	752
24...	23.0	865
25...	26.0	750
26...	26.0	850
27...	26.0	775
28...	27.0	700
29...	27.0	700
30...	28.0	750
JULY		
01...	28.0	875
02...	28.0	950
JULY		
03...	28.0	875
04...	28.0	850
05...	29.0	925
AUG.		
04...	27.0	967
05...	27.0	966
SEP.		
08...	21.5	900

DATE	TIME	AIR TEMPER- ATURE (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L) (70301)	VOLA- TILE FILT- RABLE RESIDUE (MG/L) (00520)	DIS- SOLVED SOLIDS (TONS PER DAY) (70302)	COLOR (PLAT- INUM- COBALT UNITS) (00080)	CARBON DIOXIDE (CO2) (MG/L) (00405)	PH (UNITS) (00400)
05079000 - RED LAKE RIVER AT CROOKSTON, MINN. (LAT 47 46 32 LONG 096 36 33)												
OCT., 1974												
03...	1300	18.3	7.0	1205	320	194	177	--	631	30	1.5	8.3
NOV.												
15...	0830	--	.0	1030	365	248	220	104	690	20	1.7	8.3
DEC.												
11...	1600	--	.0	839	385	256	226	103	580	10	5.1	8.1
FEB., 1975												
12...	1615	-5.0	.0	890	365	221	174	99	531	10	19	7.2
MAR.												
26...	1100	-9.0	.5	1010	470	322	278	128	678	20	2.1	8.3
MAY												
07...	1445	20.5	13.0	6730	395	267	235	89	4850	45	2.1	8.1
JUNE												
17...	1445	235	19.0	2000	360	228	202	102	1230	25	.6	8.7
SEP.												
10...	1100	16.5	15.5	2030	310	210	183	98	1150	17	--	--
05242990 - CROW WING RIVER NR HUNTERVILLE MN (LAT 46 49 23 LONG 094 52 18)												
OCT., 1974												
03...	1330	--	7.5	94	270	159	157	--	40.7	8	--	--
05243725 - STRAIGHT RIVER NR PARK RAPIDS MN (LAT 46 52 30 LONG 095 03 56)												
OCT., 1974												
02...	1645	--	5.5	58	380	226	229	--	35.6	3	--	--
05243830 - SHELL RIVER NR NIMROD MN (LAT 46 48 26 LONG 094 53 21)												
OCT., 1974												
03...	1520	--	8.0	199	315	189	188	--	102	8	--	--
05243990 - BIG SWAMP CREEK NEAR NIMROD MINN (LAT 46 40 07 LONG 094 51 15)												
OCT., 1974												
02...	1800	8.0	7.5	7.0	340	193	184	--	3.66	20	--	--
05244205 - CAT RIVER AT NIMROD MINN (LAT 46 37 46 LONG 094 53 08)												
OCT., 1974												
04...	0900	5.0	8.0	13	490	265	254	--	9.52	20	--	--
05244420 - REDEYE RIVER NEAR ALDRICH,MINN. (LAT 46 29 55 LONG 094 54 30)												
OCT., 1974												
04...	1330	14.0	9.0	25	490	264	263	--	18.4	20	--	--
05244495 - CROW WING RIVER NR STAPLES, MINN. (LAT 46 22 06 LONG 094 43 50)												
OCT., 1974												
04...	1600	12.0	10.0	513	400	207	202	--	287	8	--	--
05267820 - PLATTE RIVER NEAR PIERZ MN (LAT 45 59 43 LONG 094 12 31.0)												
AUG., 1975												
21...	1315	24.5	26.0	16	210	134	126	62	5.79	35	.7	8.5

MISCELLANEOUS ANALYSES OF STREAMS IN MINNESOTA

DATE	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	DIS-SOLVED IRON (FE) (UG/L) (01046)	TOTAL IRON (FE) (UG/L) (01045)	DIS-SOLVED MAN-GANESE (MN) (UG/L) (01056)	TOTAL MAN-GANESE (MN) (UG/L) (01055)	DIS-SOLVED BORON (B) (UG/L) (01020)	ALKA-LINITY AS CACO3 (MG/L) (00410)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)
05079000 - RED LAKE RIVER AT CROOKSTON, MINN. (LAT 47 46 32 LONG 096 36 35)												
OCT., 1974 03...	41	14	4.0	1.9	30	--	20	--	310	156	2.4	13
NOV. 14...	50	17	4.4	1.7	--	--	--	--	80	176	2.2	32
DEC. 11...	53	18	5.5	2.9	--	310	--	30	0	197	3.0	17
FEB., 1975 12...	25	19	11	3.1	--	210	--	30	40	155	2.8	9.9
MAR. 26...	61	24	5.3	4.3	--	420	--	110	50	210	3.9	44
MAY 07...	50	18	3.7	3.9	--	1900	--	100	70	134	3.9	65
JUNE 17...	47	18	3.7	2.3	--	--	--	--	20	162	3.2	25
SEP. 10...	44	15	3.2	2.3	--	10	--	140	90	146	3.3	19
05242990 - CROW WING RIVER NR HUNTERSVILLE MN (LAT 46 49 23 LONG 094 52 18)												
OCT., 1974 03...	33	15	4.0	1.2	50	--	30	--	160	146	1.0	2.9
05243725 - STRAIGHT RIVER NR PARK RAPIDS MN (LAT 46 52 30 LONG 095 03 56)												
OCT., 1974 02...	55	20	4.1	1.3	20	--	50	--	430	211	2.0	6.0
05243830 - SHELL RIVER NR NIMROD MN (LAT 46 48 26 LONG 094 53 21)												
OCT., 1974 03...	43	18	4.0	1.6	50	--	30	--	0	180	2.0	5.0
05243980 - BIG SWAMP CREEK NEAR NIMROD MINN (LAT 46 40 07 LONG 094 51 15)												
OCT., 1974 02...	47	12	4.6	1.3	200	--	220	--	340	164	.9	4.9
05244205 - CAT RIVER AT NIMROD MINN (LAT 46 37 46 LONG 094 53 04)												
OCT., 1974 04...	68	15	4.6	1.2	230	--	20	--	150	235	1.8	5.8
05244420 - REDEYE RIVER NEAR ALDRICH,MINN. (LAT 46 29 55 LONG 094 54 30)												
OCT., 1974 04...	67	20	6.4	1.8	110	--	60	--	620	243	3.8	4.6
05244495 - CROW WING RIVER NR STAPLES, MINN. (LAT 46 22 06 LONG 094 43 50)												
OCT., 1974 04...	47	18	4.9	1.3	50	--	20	--	200	190	2.5	6.0
05267820 - PLATTE RIVER NEAR PIERZ MN (LAT 45 59 43 LONG 094 12 31.01)												
AUG., 1975 21...	31	8.6	3.9	1.4	--	230	--	60	20	109	3.8	5.9

DATE	DIS- SOLVED FLUO- RIDE (F) (MG/L) (00950)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL NITRO- GEN (N) (MG/L) (00600)	TOTAL PHOS- PHORUS (P) (MG/L) (00665)	DIS- SOLVED SILICA (SIO2) (MG/L) (00955)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303)	HARD- NESS (CA,MG) (MG/L) (00900)	NON- CAR- BONATE HARD- NESS (MG/L) (00902)	SODIUM AD- SORP- TION RATIO (00931)	PERCENT SODIUM (00932)	TOTAL NITRO- GEN (NO3) (MG/L) (71887)
05079000 - RED LAKE RIVER AT CROOKSTON, MINN. (LAT 47 46 32 LONG 096 36 33)												
OCT., 1974												
03...	.1	--	.02	--	.06	6.4	.26	160	4	.1	5	--
NOV.												
15...	.1	.89	.05	.94	.05	6.7	.34	190	19	.1	5	4.2
DEC.												
11...	.1	.86	.03	.89	.04	7.9	.35	210	10	.2	5	3.9
FEB., 1975												
12...	.1	.80	.08	.88	.03	9.4	.30	140	0	.4	14	3.9
MAR.												
26...	.3	1.2	.48	1.7	.10	9.4	.44	250	41	.1	4	7.4
MAY												
07...	.1	1.1	.16	1.3	.08	7.6	.36	200	65	.1	4	5.6
JUNE												
17...	.1	.96	.00	.96	.04	4.7	.31	190	29	.1	4	4.3
SEP.												
10...	.1	2.5	.05	2.6	.08	6.9	.29	170	23	.1	4	11
05242990 - CROW WING RIVER NR HUNTERVILLE MN (LAT 46 49 23 LONG 094 52 18)												
OCT., 1974												
03...	.1	--	.00	--	.04	12	.22	140	0	.1	6	--
05243725 - STRAIGHT RIVER NR PARK RAPIDS MN (LAT 46 52 30 LONG 095 03 56)												
OCT., 1974												
02...	.1	--	.66	--	.02	13	.31	220	9	.1	4	--
05243830 - SHELL RIVER NR NIMROD MN (LAT 46 48 26 LONG 094 53 21)												
OCT., 1974												
03...	.1	--	.06	--	.03	5.2	.26	180	1	.1	5	--
05243990 - BIG SWAMP CREEK NEAR NIMROD MINN (LAT 46 40 07 LONG 094 51 15)												
OCT., 1974												
02...	.1	--	.00	--	.07	14	.26	170	3	.2	6	--
05244205 - CAT RIVER AT NIMROD MINN (LAT 46 37 46 LONG 094 53 04)												
OCT., 1974												
04...	.1	--	.03	--	.03	16	.36	230	0	.1	4	--
05244420 - REDEYE RIVER NEAR ALDRICH,MINN. (LAT 46 29 55 LONG 094 54 30)												
OCT., 1974												
04...	.1	--	.00	--	.09	13	.36	250	7	.2	5	--
05244495 - CROW WING RIVER NR STAPLES, MINN. (LAT 46 22 06 LONG 094 43 50)												
OCT., 1974												
04...	.1	--	.00	--	.02	8.0	.28	190	2	.2	5	--
05267820 - PLATTE RIVER NEAR PIERZ MN (LAT 45 59 43 LONG 094 12 31.01)												
AUG., 1975												
21...	.1	.72	.10	.82	.03	6.1	.18	110	4	.2	7	3.6

05062000 BUFFALO RIVER NEAR DILWORTH, MINN.

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL			MAY			JUNE		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	30	---	---	994	48	129	148	55	22
2	30	---	---	907	48	118	138	47	18
3	30	---	---	824	49	109	130	38	13
4	30	---	---	745	56	113	124	47	16
5	30	---	---	665	60	108	123	54	18
6	30	---	---	585	56	88	123	58	19
7	30	---	---	515	58	81	125	65	22
8	32	---	---	473	53	68	122	52	17
9	36	---	---	446	53	64	115	43	13
10	45	---	---	414	70	78	110	55	16
11	80	---	---	385	56	58	108	53	15
12	150	---	---	359	73	71	110	45	13
13	260	248	174	337	53	48	114	38	12
14	500	89	120	324	56	49	115	45	14
15	1040	100	281	328	59	52	112	43	13
16	1830	---	---	317	56	48	109	35	10
17	2660	---	---	301	53	43	107	40	12
18	2800	---	---	283	49	37	107	115	33
19	2620	---	---	270	46	34	112	523	158
20	2300	---	---	262	58	41	415	315	353
21	2060	---	---	274	60	44	877	170	403
22	1860	---	---	287	51	40	1140	95	292
23	1650	40	178	277	48	36	1490	63	253
24	1520	50	205	261	51	36	1960	38	201
25	1380	115	428	247	51	34	2030	21	115
26	1250	165	557	228	55	34	1910	11	57
27	1190	106	341	211	59	34	1830	36	178
28	1120	85	257	195	68	36	1910	115	593
29	1090	120	353	183	61	30	3030	---	---
30	1050	50	142	171	56	26	5310	---	---
31	---	---	---	159	55	24	---	---	---

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)
NOV.		
14...	.0	--
APR.		
13...	--	400
14...	--	410
15...	1.0	388
23...	5.5	567
24...	6.0	545
25...	8.0	545
26...	7.5	595
27...	7.0	625
28...	7.5	630
29...	6.0	690
30...	5.0	650
MAY		
01...	5.2	642
02...	5.0	540
03...	6.0	700
04...	9.0	700
05...	11.0	700
06...	11.5	700
07...	12.0	700
MAY		
08...	11.0	700
09...	12.0	590
10...	13.0	570
11...	14.0	690
12...	13.0	700
13...	16.0	700
14...	14.0	770
15...	11.0	800
16...	13.0	800
17...	15.0	800
18...	16.5	800
19...	16.5	790
20...	18.0	780
21...	16.5	780
22...	15.0	810
23...	18.0	750
24...	20.0	760
25...	19.0	760
26...	17.0	780

05062000 BUFFALO RIVER NEAR DILWORTH, MINN.--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	11700	---	---	141	128	49	35		
2	13500	98	3570	155	128	54	33		
3	13000	33	1160	162	130	57	36		
4	10900	---	---	166	137	61	48		
5	7800	10	211	154	136	57	42		
6	5180	---	---	141	153	58	39		
7	3920	---	---	128	168	58	38		
8	3030	10	82	115	134	42	37		
9	2590	---	---	103	143	40	36		
10	2310	---	---	92	153	38	34		
11	2030	---	---	86	160	37	33		
12	1740	12	56	80	178	38	31		
13	1500	17	69	74	174	35	29		
14	1280	29	100	69	158	29	27		
15	1080	12	35	66	134	24	25		
16	894	10	24	61	165	27	22		
17	741	20	40	57	---	---	21		
18	611	41	68	54	---	---	21		
19	493	75	100	51	---	---	22		
20	407	79	87	49	---	---	24		
21	333	94	85	46	---	---	26		
22	304	105	86	43	---	---	32		
23	281	125	95	43	---	---	34		
24	261	125	88	44	---	---	32		
25	246	128	85	48	---	---	31		
26	253	130	82	42	---	---	31		
27	215	132	77	38	90	9.2	33		
28	192	139	72	36	---	---	31		
29	170	138	63	35	---	---	32		
30	149	133	54	34	---	---	29		
31	135	140	51	35	---	---	---		

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TEMPER-ATURE (DEG C)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	DATE	TEMPER-ATURE (DEG C)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
MAY			JUNE		
27...	16.0	800	01...	16.5	750
28...	15.5	780	02...	15.0	740
29...	16.0	780	03...	16.5	720
30...	15.0	760	04...	17.8	662
31...	15.0	750			

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

05067500 MARSH RIVER NEAR SHELLY, MINN.

DATE	TIME	TEMPERATURE (DEG C)	INSTANTANEOUS DISCHARGE (CFS)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
JULY					
04...	1010	24.0	1110	47	141

05069000 SANDHILL RIVER AT CLIMAX, MINN.

DATE	TIME	TEMPERATURE (DEG C)	INSTANTANEOUS DISCHARGE (CFS)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
JULY					
02...	1630	23.0	246	305	203

05076000 THIEF RIVER NEAR THIEF RIVER FALLS, MINN.

DATE	TIME	TEMPERATURE (DEG C)	INSTANTANEOUS DISCHARGE (CFS)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
JULY					
02...	2100	22.0	3180	97	833

05087500 MIDDLE RIVER AT ARGYLE, MINN.

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
JULY				
03...	0945	4050	265	2900

05275000 ELK RIVER NEAR BIG LAKE, MINN.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	TEMPER-ATURE (DEG C)	INSTAN-TANEOUS DIS-CHARGE (CFS)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	DATE	TIME	TEMPER-ATURE (DEG C)	INSTAN-TANEOUS DIS-CHARGE (CFS)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)
AUG. 26...	1530	20.0	174	28	13	SEP. 29...	1410	15.0	117	14	4.4

05288500 MISSISSIPPI RIVER NEAR ANOKA, MINN.

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	23300			8210	---	---	6420	12	208
2	24600			8210	---	---	5600	13	197
3	24900			7950	---	---	6740	16	291
4	26200			7310	---	---	5710	13	200
5	27300			7410	---	---	5650	12	183
6	27000			6390	---	---	5670	12	184
7	27500			7030	---	---	5940	12	192
8	26700			6300	---	---	5800	12	188
9	25500			6360	---	---	5740	16	248
10	25000			6170	---	---	6140	14	232
11	23800			5950	---	---	6430	11	191
12	22500			5900	---	---	6090	10	164
13	21400			6010	---	---	6180	9	150
14	20400			5890	---	---	6170	8	133
15	19200			5520	---	---	5880	7	111
16	18100			5240	---	---	5550	9	135
17	17300			5270	---	---	5510	8	119
18	16000			5200	---	---	6340	12	205
19	15500			5450	---	---	6270	8	135
20	14000			6200	20	335	6240	7	118
21	13400			5770	19	296	6920	13	243
22	12600			5760	19	295	6180	17	284
23	12100			6140	19	315	5760	8	124
24	11600			6850	18	333	6300	6	102
25	11600			6730	17	309	6180	6	100
26	10300			6520	14	246	6020	5	81
27	9750			6130	13	215	5740	5	77
28	9440			6570	13	231	5990	5	81
29	9350			6360	13	223	6090	4	66
30	8880			6850	14	259	5960	4	64
31	8640			6910	13	243	---	---	---

05304500 CHIPPEWA RIVER NEAR MILAN, MINN.

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER			NOVEMBER			DECEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	21	---	---	58			42	---	---
2	27	---	---	71			47	63	8.0
3	28	---	---	80			47	---	---
4	32	---	---	77			46	---	---
5	35	---	---	76			46	---	---
6	39	---	---	70			46	---	---
7	39	---	---	70			45	---	---
8	40	---	---	77			45	---	---
9	41	---	---	78			45	---	---
10	43	---	---	78			46	---	---
11	40	---	---	73			46	---	---
12	37	---	---	69			45	---	---
13	35	---	---	64			44	---	---
14	28	---	---	49			43	---	---
15	30	---	---	46			42	---	---
16	27	---	---	50			41	---	---
17	30	---	---	56			40	---	---
18	32	---	---	55			39	---	---
19	30	---	---	54			38	---	---
20	31	---	---	48			37	---	---
21	32	---	---	42			37	---	---
22	28	---	---	39			36	---	---
23	32	---	---	44			36	---	---
24	30	---	---	42			36	---	---
25	31	---	---	40			37	---	---
26	31	---	---	44			37	---	---
27	28	---	---	42			37	---	---
28	29	---	---	44			38	---	---
29	32	---	---	43			37	---	---
30	34	128	12	42			37	---	---
31	35	---	---	---			37	---	---

	JANUARY			FEBRUARY			MARCH		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	36	---	---	9.4			15	---	---
2	35	---	---	9.4			15	---	---
3	34	---	---	9.5			15	---	---
4	34	---	---	9.5			15	---	---
5	33	---	---	9.6			15	---	---
6	33	---	---	9.6			15	---	---
7	32	---	---	9.7			15	---	---
8	32	---	---	9.8			15	---	---
9	31	---	---	9.9			15	---	---
10	30	106	8.6	10			15	---	---
11	25	---	---	10			15	---	---
12	17	---	---	10			15	173	7.0
13	11	---	---	11			15	---	---
14	9.4	---	---	11			16	---	---
15	8.4	---	---	11			17	---	---
16	8.2	---	---	11			19	---	---
17	8.2	---	---	12			22	---	---
18	8.2	---	---	12			25	---	---
19	8.2	---	---	12			30	---	---
20	8.6	---	---	13			35	---	---
21	8.8	---	---	13			39	---	---
22	9.0	---	---	14			40	---	---
23	9.0	---	---	14			41	---	---
24	9.0	---	---	14			42	---	---
25	9.0	---	---	14			42	---	---
26	9.1	---	---	14			43	---	---
27	9.2	---	---	14			43	---	---
28	9.2	---	---	14			44	---	---
29	9.3	---	---	---			44	---	---
30	9.4	---	---	---			44	---	---
31	9.4	---	---	---			45	---	---

05304500 CHIPPEWA RIVER NEAR MILAN, MINN.--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL			MAY			JUNE		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	45	---	---	2360	84	535	687	145	269
2	46	---	---	2250	70	425	645	119	207
3	47	---	---	2130	59	339	616	67	111
4	48	21	2.7	2000	56	302	587	---	---
5	50	---	---	1870	67	338	547	---	---
6	54	---	---	1740	74	348	515	---	---
7	58	---	---	1650	66	294	484	124	162
8	64	---	---	1580	51	218	462	121	151
9	72	---	---	1500	51	207	447	---	---
10	86	---	---	1440	55	214	428	---	---
11	104	---	---	1380	---	---	426	115	132
12	140	---	---	1300	58	204	412	---	---
13	220	---	---	1250	60	202	401	---	---
14	350	---	---	1200	65	211	397	---	---
15	981	163	432	1150	53	165	467	121	153
16	1400	155	586	1110	---	---	574	---	---
17	1620	156	682	1070	---	---	582	---	---
18	1660	210	941	1020	---	---	547	---	---
19	1680	286	1300	990	116	310	534	---	---
20	1720	220	1020	955	---	---	546	---	---
21	1750	150	709	937	105	266	599	---	---
22	1740	121	568	906	---	---	740	---	---
23	1990	135	725	902	127	309	841	---	---
24	2050	102	565	889	---	---	1020	68	187
25	1910	72	371	875	96	227	1380	---	---
26	1890	76	388	860	114	265	1290	---	---
27	1890	---	---	830	130	291	1190	---	---
28	2190	181	1070	810	104	227	1130	---	---
29	2740	330	2440	784	---	---	1050	---	---
30	2510	130	881	745	---	---	997	---	---
31	---	---	---	718	155	300	---	---	---

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	1170	177	559	249	---	---	237	---	---
2	1240	98	328	243	---	---	213	---	---
3	1050	85	241	246	---	---	202	---	---
4	961	---	---	252	---	---	193	---	---
5	904	---	---	228	---	---	188	---	---
6	892	---	---	219	---	---	188	---	---
7	884	---	---	210	115	65	183	---	---
8	842	95	216	200	---	---	176	---	---
9	809	---	---	191	---	---	173	---	---
10	755	---	---	181	---	---	168	72	33
11	688	---	---	174	---	---	161	---	---
12	639	---	---	169	---	---	154	---	---
13	603	---	---	161	---	---	150	---	---
14	566	---	---	156	---	---	147	---	---
15	536	---	---	153	---	---	141	---	---
16	502	---	---	154	---	---	138	---	---
17	468	---	---	164	---	---	134	---	---
18	442	---	---	154	---	---	138	---	---
19	416	---	---	149	---	---	141	---	---
20	396	---	---	171	---	---	150	---	---
21	382	---	---	217	---	---	145	---	---
22	371	---	---	222	---	---	145	---	---
23	365	---	---	211	---	---	136	---	---
24	340	---	---	201	---	---	132	---	---
25	326	---	---	187	---	---	130	---	---
26	312	---	---	175	---	---	123	---	---
27	299	---	---	164	---	---	123	---	---
28	286	---	---	212	---	---	119	---	---
29	280	---	---	251	---	---	117	---	---
30	268	---	---	273	---	---	110	---	---
31	255	---	---	269	---	---	---	---	---

05304500 CHIPPEWA RIVER NEAR MILAN, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TEMPER-ATURE (DEG C)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	DATE	TEMPER-ATURE (DEG C)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
OCT.			APR.		
30...	13.0	595	27...	8.0	504
DEC.			28...	9.0	515
02...	.0	601	29...	9.0	519
JAN.			30...	10.0	550
10...	.0	545	MAY		
MAR.			01...	11.0	526
11...	.0	712	02...	11.0	515
APR.			03...	12.0	526
04...	.0	756	04...	12.0	550
15...	1.0	414	05...	12.0	526
16...	1.0	394	06...	12.0	550
17...	1.0	448	07...	13.0	515
18...	.5	416	08...	13.0	550
19...	1.0	443	09...	15.0	570
20...	1.0	495	10...	13.0	576
21...	2.0	448	12...	13.0	526
22...	2.5	468	13...	13.0	570
23...	3.5	456	14...	13.0	550
24...	5.0	484	15...	17.0	550
25...	6.0	504			
26...	7.0	515			

DATE	TEMPER-ATURE (DEG C)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	DATE	TEMPER-ATURE (DEG C)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
MAY			JUNE		
19...	21.0	460	08...	--	450
21...	18.0	490	11...	--	450
23...	21.0	520	15...	--	460
25...	20.0	420	28...	20.0	500
26...	19.0	420	JULY		
27...	19.0	460	01...	28.0	520
28...	20.0	480	02...	28.0	500
31...	20.0	500	03...	28.0	420
JUNE			08...	24.0	514
01...	28.0	520	AUG.		
02...	--	540	07...	24.5	513
03...	18.5	638	SEP.		
04...	--	520	10...	20.0	612
07...	--	500			

05317000 COTTONWOOD RIVER NEAR NEW ULM, MINN.

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER			NOVEMBER			DECEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	9.7	---	---	23	71	4.4	18	136	6.6
2	9.7	---	---	25	---	---	17	150	6.9
3	10	---	---	22	---	---	17	---	---
4	11	---	---	21	---	---	17	---	---
5	12	---	---	20	106	5.7	16	---	---
6	14	---	---	20	---	---	16	---	---
7	14	---	---	20	---	---	16	---	---
8	15	---	---	19	---	---	16	---	---
9	16	75	3.2	20	---	---	15	---	---
10	21	---	---	25	---	---	15	---	---
11	25	---	---	25	---	---	15	---	---
12	19	---	---	24	---	---	15	---	---
13	24	---	---	24	---	---	15	---	---
14	24	---	---	19	---	---	15	---	---
15	22	63	3.7	21	---	---	15	---	---
16	18	---	---	24	---	---	15	---	---
17	17	---	---	25	---	---	15	---	---
18	17	---	---	24	---	---	15	---	---
19	15	---	---	23	---	---	15	---	---
20	15	---	---	23	---	---	15	---	---
21	16	---	---	23	91	5.7	16	---	---
22	16	---	---	23	---	---	16	---	---
23	15	---	---	23	---	---	16	---	---
24	15	---	---	23	---	---	16	---	---
25	15	---	---	22	---	---	16	---	---
26	17	---	---	21	---	---	16	---	---
27	21	42	2.4	21	---	---	16	---	---
28	17	---	---	20	---	---	16	---	---
29	19	---	---	19	---	---	16	---	---
30	19	---	---	19	---	---	16	---	---
31	20	---	---	---	---	---	16	---	---

	JANUARY			FEBRUARY			MARCH		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	16	---	---	13			12	---	---
2	16	---	---	13			12	---	---
3	16	---	---	13			12	---	---
4	16	---	---	12			12	---	---
5	16	---	---	12			12	---	---
6	16	---	---	12			12	---	---
7	16	22	.95	12			12	---	---
8	16	---	---	12			12	---	---
9	16	---	---	12			12	---	---
10	16	---	---	12			12	---	---
11	16	---	---	12			12	---	---
12	15	---	---	12			12	---	---
13	15	---	---	12			12	---	---
14	15	---	---	12			12	---	---
15	15	---	---	12			12	---	---
16	15	---	---	12			12	---	---
17	14	---	---	12			12	---	---
18	14	---	---	12			12	---	---
19	14	---	---	12			13	---	---
20	14	---	---	12			20	---	---
21	14	---	---	12			34	50	4.6
22	14	---	---	12			47	57	7.2
23	14	---	---	12			58	---	---
24	13	---	---	12			62	---	---
25	13	---	---	12			61	---	---
26	13	---	---	12			60	---	---
27	13	---	---	12			60	---	---
28	13	---	---	12			58	---	---
29	13	---	---	---			57	---	---
30	13	---	---	---			56	---	---
31	13	---	---	---			55	---	---

05317000 COTTONWOOD RIVER NEAR NEW ULM, MINN.--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL			MAY			JUNE		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	56	---	---	1270	229	785	150	---	---
2	53	---	---	1010	203	554	141	---	---
3	51	---	---	851	189	434	138	---	---
4	49	---	---	733	181	358	147	---	---
5	48	---	---	643	175	304	148	---	---
6	52	---	---	560	166	251	145	---	---
7	62	---	---	487	152	200	142	---	---
8	75	---	---	439	137	162	136	---	---
9	95	---	---	398	126	135	130	---	---
10	110	---	---	362	116	113	132	---	---
11	130	---	---	339	---	---	125	---	---
12	165	---	---	336	---	---	127	87	30
13	228	---	---	312	---	---	122	---	---
14	510	---	---	297	---	---	129	---	---
15	983	385	1070	274	---	---	181	---	---
16	1390	1200	4500	255	---	---	187	---	---
17	1620	1500	6560	241	---	---	261	---	---
18	2280	1040	6400	227	---	---	301	---	---
19	2520	535	3640	215	---	---	293	---	---
20	2160	385	2250	204	57	31	287	---	---
21	1500	230	931	196	---	---	351	---	---
22	1220	244	804	184	---	---	502	---	---
23	1490	343	1380	183	---	---	483	---	---
24	2990	1420	11500	173	---	---	747	---	---
25	2840	725	5560	179	---	---	538	---	---
26	2060	354	1970	260	---	---	405	269	294
27	1650	249	1110	241	---	---	337	---	---
28	1550	252	1050	217	---	---	282	---	---
29	1550	254	1060	190	93	48	270	---	---
30	1580	244	1040	178	77	37	237	---	---
31	---	---	---	163	---	---	---	---	---

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	200	---	---	23	---	---	24	---	---
2	176	---	---	23	---	---	22	---	---
3	155	52	22	23	19	1.2	20	---	---
4	138	---	---	21	---	---	19	---	---
5	127	---	---	21	---	---	19	---	---
6	116	---	---	21	---	---	17	---	---
7	107	---	---	20	26	1.4	16	---	---
8	100	---	---	17	---	---	15	---	---
9	92	---	---	20	---	---	16	---	---
10	86	---	---	18	---	---	21	58	3.3
11	79	50	11	17	---	---	29	66	5.2
12	74	---	---	25	---	---	27	---	---
13	68	---	---	22	35	2.1	24	---	---
14	63	---	---	18	---	---	23	---	---
15	57	---	---	19	---	---	20	---	---
16	51	---	---	19	---	---	18	---	---
17	47	---	---	18	---	---	17	---	---
18	43	---	---	18	---	---	17	---	---
19	41	---	---	35	---	---	18	---	---
20	39	---	---	34	61	5.6	18	---	---
21	36	20	1.9	34	---	---	17	---	---
22	34	---	---	35	---	---	17	---	---
23	32	---	---	35	---	---	15	---	---
24	31	---	---	32	---	---	15	---	---
25	30	---	---	29	---	---	15	---	---
26	30	---	---	29	---	---	14	---	---
27	29	---	---	28	---	---	13	---	---
28	28	---	---	50	---	---	20	---	---
29	26	---	---	57	---	---	18	36	1.8
30	25	---	---	42	---	---	17	---	---
31	25	---	---	29	---	---	---	---	---

05317000 COTTONWOOD RIVER NEAR NEW ULM, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)
OCT.		
09...	14.0	691
15...	9.0	749
27...	13.0	674
NOV.		
01...	12.0	850
05...	7.0	648
21...	2.0	695
DEC.		
01...	.0	864
02...	.5	--
JAN.		
07...	.5	610
FEB.		
13...	.0	--
MAR.		
19...	6.0	504
21...	2.0	756
22...	3.0	733
APR.		
15...	5.0	807
16...	3.0	756

DATE	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)
APR.		
17...	2.0	756
18...	3.0	733
19...	3.0	733
20...	4.0	733
21...	6.0	806
22...	6.0	880
23...	7.0	896
24...	6.0	654
25...	7.0	654
26...	8.0	807
27...	8.0	896
28...	10.0	931
29...	10.0	1000
30...	9.5	1044
MAY		
01...	11.0	1050
02...	11.0	807

DATE	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)
MAY		
03...	13.0	1100
04...	14.0	1000
05...	16.0	1150
06...	18.0	1150
07...	14.0	1150
09...	16.0	1150
10...	18.0	1150
20...	23.0	1100
29...	19.0	1050
30...	19.0	--
JUNE		
12...	23.0	900
26...	26.0	941

DATE	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)
JULY		
03...	26.0	908
11...	25.0	828
21...	28.0	796
AUG.		
03...	29.0	739
07...	26.5	761
13...	25.0	795
20...	25.0	678
SEP.		
10...	24.0	721
11...	21.5	664
29...	14.0	676

05317000 COTTONWOOD RIVER NEAR NEW ULM, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	NUMBER OF SAM- PLING POINTS	INSTAN- TANEOUS DIS- CHARGE (CFS)	BED MAT, FALL DIAM, % FINER THAN .062 MM	BED MAT, FALL DIAM, % FINER THAN .125 MM	BED MAT, FALL DIAM, % FINER THAN .250 MM	BED MAT, FALL DIAM, % FINER THAN .500 MM	BED MAT, FALL DIAM, % FINER THAN 1.00 MM	BED MAT, SIEVE DIAM, % FINER THAN 2.00 MM	BED MAT, SIEVE DIAM, % FINER THAN 4.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM
NOV,											
01...	1230	4	22	1	2	11	53	90	96	100	--
JULY											
03...	0945	4	154	--	--	11	48	79	82	87	100

DATE	TIME	TEMPER- ATURE (DEG C)	INSTAN- TANEOUS DIS- CHARGE (CFS)	SUS- PENDED SEDI- MENT (MG/L)	SUS- PENDED SEDI- MENT DIS- CHARGE (T/DAY)	SUS. SED. FALL DIAM, % FINER THAN .002 MM	SUS. SED. FALL DIAM, % FINER THAN .004 MM
APR,							
22...	1130	5.5	1180	250	796	35	40
30...	1635	8.5	1560	258	1090	52	67

DATE	SUS. SED. FALL DIAM, % FINER THAN .008 MM	SUS. SED. FALL DIAM, % FINER THAN .016 MM	SUS. SED. FALL DIAM, % FINER THAN .062 MM	SUS. SED. FALL DIAM, % FINER THAN .125 MM	SUS. SED. FALL DIAM, % FINER THAN .250 MM	SUS. SED. FALL DIAM, % FINER THAN .500 MM
APR,						
22...	51	--	69	74	97	100
30...	77	85	--	--	--	--

MISCELLANEOUS ANALYSES OF STREAMS IN MINNESOTA

05330915 BLACK DOG CREEK AT BURNSVILLE, MINN.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPER-ATURE (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	DIS-SOLVED OXYGEN (MG/L) (00300)	PER-CENT SATUR-ATION (00301)	PH (UNITS) (00400)	INSTAN-TANEOUS DIS-CHARGE (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)
AUG. 27...	1045	19.5	14.0	8.9	88	8.0	4.3	715	424	.58
SEP. 18...	1345	19.0	14.5	8.8	88	8.1	1.8	591	330	.45

DATE	SUS-PENDED SOLIDS (MG/L) (70299)	TUR-BID-ITY (JTU) (00070)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L) (00625)	SUS-PENDED KJEL. NITRO-GEN (N) (MG/L) (00624)	DIS-SOLVED KJEL. NITRO-GEN (N) (MG/L) (00623)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
AUG. 27...	40	11	85	17	22	.67	.33	.34	.42	.42
SEP. 18...	12	6	71	8.6	14	.52	.02	.50	.35	.35

AUG. 27, 1975
1045 HOURS

IDENTIFICATION OF PHYTOPLANKTON

49.000 CELLS/ML

_ORGANISM__NAME_______________	_COMMON__NAME_______	CELLS/ML	PER_CENT
CHLOROPHYTA	GREEN ALGAE		
.CHLOROPHYCEAE			
..CHLOROCOCCALES			
...SCENEDESMACEAE			
....TETRASTRUM		580	1
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..CENTRALES	CENTRIC		
...COSCINODISCACEAE			
....CYCLOTELLA		430	1
....MELOSIRA		1.200	2
..PENNALES	PENNATE		
...NAVICULACEAE	NAVICULOID		
....NAVICULA		860	2
...NITZSCHIACEAE			
....NITZSCHIA		1.000	2
CYANOPHYTA	BLUE-GREEN ALGAE		
.MYXOPHYCEAE			
..CHROOCOCCALES	COCCOID		
...CHROOCOCCACEAE			
D ....ANACYSTIS		25.000	51
..OSCILLATORIALES	FILAMENTOUS		
...NOSTOCACEAE			
....ANABAENA		3.500	7
...OSCILLATORIACEAE			
D ....OSCILLATORIA		14.000	29
EUGLENOPHYTA	EUGLENOIDS		
.EUGLENOPHYCEAE			
..EUGLENALES			
...EUGLENACEAE			
....EUGLENA		2.000	4
L ....TRACHELOMONAS			0

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
L - LESS THEN 1%: MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER . 200-X MICROSCOPE
DIVERSITY INDICES. BASED ON ACTUAL COUNTS:
PHYL/DIV 0.711
CLASS 0.711
ORDER 1.636
FAMILY 1.929
GENERA 1.972

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05330915 BLACK DOG CREEK AT BURNSVILLE, MINN.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TOTAL NITRO-GEN (N) (MG/L) (00600)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOL-VED PHOS-PHORUS (P) (MG/L) (00666)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	OIL AND GREASE (MG/L) (00550)	FECAL COLI-FORM (COL. PER 100 ML) (31616)	STREP-TOCOCCI (COL-ONIES PER 100 ML) (31679)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	TOTAL NITRO-GEN (NO3) (MG/L) (71887)
AUG. 27...	1.1	.17	.11	6.2	21	2	470	1600	4.92	4.8
SEP. 18...	.87	.08	.05	5.7	19	10	1300	4200	1.60	3.9

SEP. 18, 1975
1345 HOURS

IDENTIFICATION OF PHYTOPLANKTON

860 CELLS/ML

_ORGANISM__NAME_______________	_COMMON__NAME______	CELLS/ML	PER_CENT
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..CENTRALES	CENTRIC		
...COSCINODISCACEAE			
L ....CYCLOTELLA			0
..PENNALES	PENNATE		
...ACHNANTHACEAE			
....ACHNANTHES		29	3
...CYMBELLACEAE			
L ....AMPHORA			0
...FRAGILARIACEAE			
L ....FRAGILARIA			0
...GOMPHONEMATACEAE			
L ....GOMPHONEMA			0
...MERIDIONACEAE			
L ....MERIDION			0
...NAVICULACEAE	NAVICULOID		
L ....GYROSIGMA			0
D ....NAVICULA		260	30
...NITZSCHIACEAE			
D ....NITZSCHIA		340	40
CYANOPHYTA	BLUE-GREEN ALGAE		
.MYXOPHYCEAE			
..OSCILLATORIALES	FILAMENTOUS		
...OSCILLATORIACEAE			
D ....OSCILLATORIA		230	27

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
L - LESS THEN 1%: MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.837
CLASS 0.837
ORDER 0.837
FAMILY 1.722
GENERA 1.722

05374000 ZUMBRO RIVER AT ZUMBRO FALLS, MINN.

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER			NOVEMBER			DECEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	344	---	---	365	---	---	273		
2	332	---	---	448	---	---	329		
3	289	---	---	429	---	---	336		
4	381	---	---	321	---	---	336		
5	360	---	---	398	---	---	332		
6	332	---	---	398	---	---	344		
7	340	---	---	293	---	---	329		
8	332	---	---	250	---	---	309		
9	329	---	---	156	---	---	301		
10	329	---	---	156	---	---	236		
11	416	---	---	462	---	---	247		
12	647	---	---	407	---	---	247		
13	608	---	---	281	---	---	258		
14	608	---	---	301	---	---	301		
15	344	---	---	369	---	---	344		
16	344	---	---	332	---	---	340		
17	329	---	---	305	---	---	356		
18	377	---	---	462	---	---	309		
19	340	---	---	466	---	---	365		
20	352	---	---	381	---	---	394		
21	336	18	16	394	---	---	407		
22	344	---	---	485	---	---	266		
23	332	---	---	301	---	---	240		
24	340	---	---	178	---	---	247		
25	216	---	---	394	9	9.6	281		
26	313	---	---	511	---	---	365		
27	389	---	---	365	---	---	273		
28	236	---	---	289	---	---	281		
29	240	---	---	373	---	---	273		
30	385	---	---	352	---	---	348		
31	377	---	---	---	---	---	352		

	JANUARY			FEBRUARY			MARCH		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	309	---	---	301	---	---	201	---	---
2	206	---	---	223	---	---	223	---	---
3	336	---	---	305	---	---	500	---	---
4	317	---	---	281	---	---	741	---	---
5	293	---	---	313	---	---	753	---	---
6	269	9	6.5	236	---	---	747	---	---
7	313	---	---	261	---	---	485	---	---
8	293	---	---	219	---	---	223	---	---
9	452	---	---	181	---	---	325	---	---
10	480	---	---	193	13	6.8	236	---	---
11	184	---	---	124	---	---	270	---	---
12	297	---	---	344	---	---	250	---	---
13	236	---	---	332	---	---	336	---	---
14	309	---	---	270	---	---	289	---	---
15	377	---	---	147	---	---	137	---	---
16	360	---	---	344	---	---	369	---	---
17	317	---	---	313	---	---	297	---	---
18	167	---	---	203	---	---	348	---	---
19	341	---	---	277	---	---	340	---	---
20	254	---	---	273	---	---	385	---	---
21	352	---	---	187	---	---	717	28	54
22	219	---	---	352	---	---	802	44	95
23	206	---	---	270	---	---	865	55	128
24	365	---	---	223	---	---	859	59	137
25	329	---	---	219	---	---	852	60	138
26	247	---	---	301	---	---	846	59	135
27	337	---	---	297	---	---	859	57	132
28	313	---	---	289	---	---	852	60	138
29	236	---	---	---	---	---	840	---	---
30	184	---	---	---	---	---	827	76	170
31	199	---	---	---	---	---	833	27	61

05374000 ZUMBRO RIVER AT ZUMBRO FALLS, MINN.--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL			MAY			JUNE		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	814	30	66	2300	305	1690	957	31	80
2	814	26	57	1830	400	1980	911	29	71
3	802	26	56	2250	380	2510	898	27	65
4	796	28	60	3080	---	---	986	155	413
5	796	28	60	2250	173	1050	1830	1900	9390
6	796	27	58	1760	105	499	1200	741	2560
7	808	25	55	1540	72	299	995	160	430
8	833	24	54	1530	61	252	950	90	231
9	871	33	78	1650	72	317	926	50	125
10	1080	73	213	1600	67	289	611	50	82
11	1280	---	---	1390	38	143	779	565	1190
12	1970	213	1130	1360	37	136	1960	---	---
13	2630	182	1290	1330	43	154	2580	410	2860
14	3070	170	1410	1200	38	123	1770	130	621
15	3220	167	1450	1080	32	93	1880	65	330
16	2830	147	1120	1010	27	74	2890	170	1330
17	2630	115	817	949	28	72	2650	825	6350
18	2540	75	514	878	38	90	3280	325	2880
19	2650	54	386	900	36	87	3790	220	2250
20	2460	48	319	898	35	85	3310	180	1610
21	1860	47	236	676	36	66	2160	165	962
22	1600	46	199	548	39	58	1840	175	869
23	1950	253	1320	722	37	72	1560	225	948
24	2730	216	1590	817	30	66	1130	---	---
25	2130	100	575	842	---	---	1090	---	---
26	1670	70	316	968	---	---	1080	---	---
27	1940	518	2710	1530	25	103	1220	---	---
28	4910	940	12500	1210	25	82	1280	---	---
29	6990	490	9250	930	25	63	1220	---	---
30	3450	230	2140	946	27	69	1630	---	---
31	---	---	---	960	30	78	---	---	---

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	1660	---	---	448	---	---	377		
2	1210	---	---	253	---	---	378		
3	1020	---	---	360	---	---	365		
4	929	---	---	484	---	---	367		
5	899	---	---	323	---	---	363		
6	869	---	---	247	---	---	278		
7	894	---	---	354	---	---	246		
8	634	---	---	363	---	---	279		
9	511	---	---	227	---	---	234		
10	860	---	---	455	---	---	231		
11	726	---	---	409	17	19	286		
12	288	---	---	306	---	---	332		
13	400	---	---	239	---	---	274		
14	728	---	---	357	---	---	274		
15	488	---	---	321	---	---	248		
16	486	---	---	214	---	---	250		
17	425	---	---	274	---	---	321		
18	398	---	---	336	---	---	294		
19	419	---	---	379	---	---	329		
20	396	---	---	325	---	---	284		
21	522	80	113	336	---	---	339		
22	417	---	---	360	---	---	208		
23	399	---	---	221	---	---	288		
24	440	---	---	443	---	---	358		
25	437	---	---	339	---	---	407		
26	236	---	---	383	---	---	781		
27	419	---	---	800	---	---	794		
28	428	---	---	584	---	---	788		
29	317	---	---	583	---	---	703		
30	411	---	---	222	---	---	190		
31	400	---	---	186	---	---	---		

05374000 ZUMBRO RIVER AT ZUMBRO FALLS, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	TEMPER-ATURE (DEG C)	INSTAN-TANEOUS DIS-CHARGE (CFS)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .002 MM	SUS. SED. FALL DIAM. % FINER THAN .004 MM
APR.							
24...	1300	7.5	2840	191	1460	41	52
29...	1345	10.0	7840	429	9080	33	36

DATE	SUS. SED. FALL DIAM. % FINER THAN .008 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	SUS. SED. FALL DIAM. % FINER THAN .125 MM	SUS. SED. FALL DIAM. % FINER THAN .250 MM	SUS. SED. FALL DIAM. % FINER THAN .500 MM	SUS. SED. FALL DIAM. % FINER THAN 1.00 MM
APR.							
24...	61	76	98	--	--	--	--
29...	39	54	79	82	88	99	100

DATE	TEMPER-ATURE (DEG C)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
OCT.		
21...	9.0	522
NOV.		
25...	2.0	514
JAN.		
06...	3.5	572
FEB.		
10...	.0	605
MAR.		
21...	--	538
22...	--	538
23...	--	538
24...	--	448
25...	--	403
26...	--	403
27...	--	432
28...	--	515
29...	--	538
30...	--	403
31...	1.5	436
APR.		
01...	--	432
02...	--	432

DATE	TEMPER-ATURE (DEG C)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
APR.		
03...	--	465
04...	--	465
05...	--	457
06...	--	576
07...	--	465
08...	--	351
09...	--	372
10...	--	351
12...	--	327
13...	--	341
14...	--	310
15...	--	306
16...	--	310
17...	--	318
18...	6.0	384
19...	7.0	388
20...	7.0	390
21...	8.0	397

05374000 ZUMBRO RIVER AT ZUMBRO FALLS, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)
APR.		
22...	9.0	384
23...	10.0	397
24...	7.5	417
25...	11.0	432
26...	10.0	432
27...	9.0	397
28...	7.5	403
29...	10.0	425
30...	9.5	403
MAY		
01...	9.5	367
02...	10.0	295
03...	10.5	397
04...	12.0	465
05...	14.0	367
06...	15.0	440
07...	16.0	475
08...	15.0	484
09...	10.0	484

DATE	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)
MAY		
10...	15.5	484
11...	14.0	484
12...	15.0	484
13...	16.0	484
14...	16.5	484
15...	17.0	494
16...	19.0	494
17...	18.0	431
18...	20.5	422
19...	17.0	530
20...	20.5	414
21...	20.0	422
22...	19.0	440
23...	19.5	431
24...	20.5	460
25...	18.0	505
26...	19.0	481
27...	19.0	481
28...	18.5	460

DATE	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)
MAY		
29...	16.5	431
30...	18.5	481
31...	18.0	481
JUNE		
01...	18.5	450
02...	16.5	450
03...	20.5	470
04...	15.5	440
05...	19.5	405
06...	19.0	460
07...	18.5	460
08...	18.0	470
09...	16.0	460
10...	18.5	431
11...	16.5	391
12...	16.5	391

DATE	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)
JUNE		
13...	15.5	450
14...	19.5	481
15...	21.0	414
16...	16.5	440
17...	20.0	431
18...	20.0	431
19...	22.0	422
20...	20.0	422
21...	22.5	422
22...	23.0	422
23...	23.0	431
JULY		
21...	25.5	518
AUG.		
11...	19.0	484

05385000 ROOT RIVER NEAR HOUSTON, MINN.

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER			NOVEMBER			DECEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	580	---	---	688	---	---	550		
2	570	---	---	673	---	---	540		
3	572	---	---	641	---	---	505		
4	577	---	---	621	---	---	540		
5	591	---	---	604	---	---	525		
6	598	---	---	597	---	---	535		
7	596	---	---	590	---	---	560		
8	587	---	---	590	---	---	555		
9	551	---	---	583	---	---	470		
10	554	---	---	598	---	---	500		
11	551	---	---	631	---	---	540		
12	568	---	---	615	---	---	565		
13	590	---	---	595	---	---	575		
14	595	---	---	585	---	---	555		
15	595	---	---	575	---	---	570		
16	570	---	---	570	---	---	580		
17	555	---	---	565	---	---	555		
18	550	---	---	570	---	---	525		
19	535	---	---	570	---	---	525		
20	520	---	---	550	---	---	520		
21	520	---	---	535	---	---	500		
22	520	---	---	545	---	---	520		
23	528	66	94	545	---	---	540		
24	523	---	---	550	---	---	500		
25	543	---	---	540	---	---	485		
26	525	---	---	535	---	---	475		
27	533	---	---	530	24	34	485		
28	554	---	---	540	---	---	490		
29	586	---	---	520	---	---	490		
30	591	---	---	560	---	---	480		
31	631	---	---	---	---	---	480		

	JANUARY			FEBRUARY			MARCH		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	470	---	---	478	---	---	422	---	---
2	440	---	---	476	---	---	420	---	---
3	450	---	---	474	---	---	420	---	---
4	455	---	---	472	---	---	420	---	---
5	455	---	---	470	---	---	420	---	---
6	540	---	---	468	---	---	422	---	---
7	545	40	59	466	---	---	424	---	---
8	510	---	---	464	---	---	426	---	---
9	470	---	---	462	---	---	428	---	---
10	450	---	---	460	---	---	430	---	---
11	440	---	---	458	---	---	432	---	---
12	410	---	---	456	---	---	434	---	---
13	410	---	---	454	---	---	436	---	---
14	450	---	---	452	---	---	439	---	---
15	480	---	---	450	---	---	455	---	---
16	480	---	---	448	---	---	484	---	---
17	478	---	---	446	---	---	485	---	---
18	476	---	---	444	---	---	497	---	---
19	474	---	---	442	30	36	507	---	---
20	472	---	---	440	---	---	562	89	135
21	470	---	---	438	---	---	740	200	405
22	472	---	---	436	---	---	1140	426	1300
23	472	---	---	434	---	---	1540	688	2860
24	474	---	---	432	---	---	2040	739	4070
25	474	---	---	430	---	---	2090	695	3920
26	474	---	---	428	---	---	1970	612	3260
27	476	---	---	426	---	---	1610	420	1830
28	476	---	---	424	---	---	1410	267	1020
29	476	---	---	---	---	---	1180	226	720
30	478	---	---	---	---	---	1060	162	464
31	478	---	---	---	---	---	970	156	409

053850 ROOT RIVER NEAR HOUSTON, MINN.--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL			MAY			JUNE		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	952	156	401	2950	467	3720	1010	161	439
2	890	105	252	2340	310	1960	955	158	407
3	852	---	---	2030	268	1470	917	128	317
4	815	---	---	1870	230	1160	991	595	2090
5	825	---	---	1840	194	959	1280	1840	6360
6	868	---	---	1660	168	753	991	1100	2940
7	1060	162	464	1500	154	624	897	442	1070
8	1840	524	2590	1410	163	621	858	261	605
9	2650	715	5120	1380	148	551	830	241	540
10	2030	490	2690	1460	155	611	815	209	460
11	1580	388	1660	1400	138	522	823	226	502
12	1600	260	1120	1340	115	416	857	348	805
13	2320	433	2710	1660	180	807	937	274	693
14	2470	501	3340	1510	161	656	898	194	470
15	2470	526	3510	1290	115	401	913	150	369
16	2130	432	2480	1170	86	272	883	139	331
17	2070	373	2080	1090	119	350	913	241	594
18	2110	355	2020	1040	145	407	996	381	1020
19	2120	336	1920	1070	150	433	1320	602	2150
20	2330	340	2140	1120	164	496	1700	810	3720
21	1890	387	1970	1020	179	493	1510	572	2330
22	1590	294	1260	999	131	353	1460	504	1990
23	1510	240	978	1170	898	2840	1410	429	1630
24	1790	326	1580	1110	565	1690	1370	396	1460
25	1960	374	1980	1040	270	758	1100	369	1100
26	1610	342	1490	976	200	527	1080	375	1090
27	1640	1120	4960	939	171	434	1780	5080	26500
28	4030	2270	24700	919	168	417	1610	3880	16900
29	8160	2030	44700	936	158	399	1260	1360	4630
30	4310	1010	11800	975	130	342	1340	1550	5610
31	---	---	---	1030	127	353	---	---	---

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	1350	3400	12400	585	121	191	560	164	248
2	1120	1430	4320	590	118	188	540	164	239
3	1030	560	1560	590	124	198	525	155	220
4	957	410	1060	580	146	229	505	152	207
5	1360	5100	18700	575	174	270	480	150	194
6	1450	1870	7320	570	175	269	480	147	191
7	1090	1940	5710	560	156	236	470	142	180
8	926	680	1700	565	146	223	480	134	174
9	864	410	956	565	142	217	490	118	156
10	858	360	834	555	140	210	475	93	119
11	835	---	---	555	132	198	468	82	104
12	820	---	---	525	150	213	468	99	125
13	803	---	---	520	210	295	460	110	137
14	791	---	---	515	225	313	484	110	144
15	777	---	---	536	232	336	480	104	135
16	766	---	---	554	247	369	480	91	118
17	748	---	---	555	228	342	484	83	108
18	734	---	---	564	191	291	485	83	109
19	723	---	---	579	196	306	496	75	101
20	695	---	---	599	188	304	510	51	70
21	670	---	---	637	210	361	504	43	59
22	645	149	259	726	297	582	500	41	55
23	625	132	223	726	229	449	495	47	63
24	635	132	226	709	264	505	490	38	50
25	625	131	221	1800	1860	9210	485	38	50
26	605	114	186	1280	1340	4630	485	54	71
27	595	102	164	885	568	1360	485	58	76
28	585	98	155	745	280	563	490	55	73
29	580	102	160	675	230	419	495	50	67
30	570	106	163	645	227	395	500	42	57
31	575	115	179	590	177	282	---	---	---

05385000 ROOT RIVER NEAR HOUSTON, MINN.--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---		---	---	---	3.0	10.0	18.0	25.5	27.0	22.0
2	---	---		---	---	---	3.0	12.0	18.0	26.0	25.0	21.0
3	---	---		---	---	---	---	13.0	20.0	27.0	26.0	23.0
4	---	---		---	---	---	---	13.0	22.0	26.0	27.0	20.0
5	---	---		---	---	---	---	15.0	22.0	24.0	19.0	20.0
6	---	---		---	---	---	---	15.0	20.0	25.0	22.0	20.0
7	---	---		0.0	---	---	8.0	13.0	20.0	26.0	22.0	19.0
8	---	---		---	---	---	6.0	12.0	---	25.0	25.5	19.0
9	---	---		---	---	---	2.0	15.0	16.0	22.0	29.0	17.0
10	---	---		---	---	---	4.0	16.0	17.0	21.0	28.5	21.0
11	---	---		---	---	---	5.0	14.0	16.0	---	26.0	18.0
12	---	---		---	---	---	8.0	17.0	16.0	---	25.5	15.0
13	---	---		---	---	---	7.0	17.0	19.0	---	24.0	15.0
14	---	---		---	---	---	6.0	17.0	---	---	23.0	16.0
15	---	---		---	---	---	7.0	16.0	17.0	---	23.0	14.0
16	---	---		---	---	---	7.5	18.0	16.0	---	22.0	16.0
17	---	---		---	---	---	9.0	20.0	19.0	---	23.0	17.0
18	---	---		---	---	---	7.0	---	18.0	---	21.0	18.0
19	---	---		---	0.0	---	6.0	22.0	23.0	---	21.0	14.0
20	---	---		---	---	6.5	6.0	22.0	23.0	---	22.0	13.0
21	---	---		---	---	---	7.0	21.5	25.0	---	25.0	12.0
22	---	---		---	---	6.0	9.0	22.0	25.0	27.0	21.0	14.0
23	8.5	---		---	---	4.0	11.0	21.0	25.0	24.0	25.0	12.0
24	---	---		---	---	3.0	12.0	22.0	---	25.0	25.0	14.0
25	---	---		---	2.0	---	13.0	22.0	24.0	24.0	22.0	14.0
26	---	---		---	1.0	---	10.0	21.0	---	26.0	20.0	15.0
27	---	3.0		---	0.0	---	9.0	21.0	25.0	26.0	22.0	15.0
28	---	---		---	1.0	---	7.5	22.0	---	27.0	25.0	12.0
29	---	---		---	---	---	8.5	15.0	26.0	28.0	22.0	13.0
30	---	---		---	---	---	10.0	15.0	---	28.0	20.0	12.0
31	---	---		---	---	---	---	16.0	---	27.0	22.0	---

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	TEMPER-ATURE (DEG C)	INSTAN-TANEOUS DIS-CHARGE (CFS)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .002 MM	SUS. SED. FALL DIAM. % FINER THAN .004 MM
APR.							
29...	1555	10.0	9400	2820	71600	40	46
JULY							
01...	1600	24.0	1170	3040	9600	43	62
05...	1655	24.0	2020	8270	45100	28	59

DATE	SUS. SED. FALL DIAM. % FINER THAN .008 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	SUS. SED. FALL DIAM. % FINER THAN .125 MM	SUS. SED. FALL DIAM. % FINER THAN .250 MM	SUS. SED. FALL DIAM. % FINER THAN .500 MM
APR.						
29...	63	81	93	95	99	100
JULY						
01...	81	91	99	99	100	--
05...	54	73	99	--	--	--

05385000 ROOT RIVER NEAR HOUSTON, MINN.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---		---		---	457	425	339	324	355	491
2	---	---		---		---	465	448	309	303	419	501
3	---	---		---		---	---	295	339	316	398	501
4	---	---		---		---	---	323	339	325	412	265
5	---	---		---		---	---	341	442	275	443	307
6	---	---		---		---	---	356	414	253	405	328
7	---	---		454		---	457	384	296	296	391	292
8	---	---		---		---	417	318	---	312	378	338
9	---	---		---		---	278	346	300	334	355	288
10	---	---		---		---	281	372	292	339	360	319
11	---	---		---		---	356	403	314	---	329	392
12	---	---		---		---	378	403	309	---	372	328
13	---	---		---		---	346	378	309	---	367	328
14	---	---		---		---	327	403	---	---	339	315
15	---	---		---		---	356	390	304	---	372	307
16	---	---		---		---	322	417	318	---	303	299
17	---	---		---		---	288	269	357	---	372	307
18	---	---		---		---	327	---	370	---	372	307
19	---	---		446		---	378	269	304	---	349	307
20	---	---		---		422	410	284	376	---	398	315
21	---	---		---		---	314	239	406	---	334	315
22	---	---		---		425	314	357	431	303	419	333
23	393	---		---		390	346	259	440	355	435	311
24	---	---		---		336	425	288	---	325	384	311
25	---	---		---		336	425	304	391	325	378	324
26	---	---		---		332	314	432	---	325	320	333
27	---	470		---		346	314	390	442	325	391	359
28	---	---		---		372	361	284	---	325	443	370
29	---	---		---		403	261	304	429	329	480	324
30	---	---		---		440	356	318	---	329	480	376
31	---	---		---		448	---	323	---	341	480	---

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	NUMBER OF SAM-PLING POINTS	INSTAN-TANEOUS DIS-CHARGE (CFS)	BED MAT. FALL DIAM. % FINER THAN .062 MM	BED MAT. FALL DIAM. % FINER THAN .125 MM	BED MAT. FALL DIAM. % FINER THAN .250 MM	BED MAT. FALL DIAM. % FINER THAN .500 MM	BED MAT. FALL DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM
SEP. 04...	1700	3	505	0	1	13	72	94	98	100

MISCELLANEOUS ANALYSES OF STREAMS IN MINNESOTA

05385500 SOUTH FORK ROOT RIVER NEAR HOUSTON, MINN.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	BED MAT. FALL DIAM. % FINER THAN .062 MM	BED MAT. FALL DIAM. % FINER THAN .125 MM	BED MAT. FALL DIAM. % FINER THAN .250 MM	BED MAT. FALL DIAM. % FINER THAN .500 MM
SEP.						
04...	1615	130	0	1	58	100

SPECIFIC CONDUCTANCE
(MICROMHOS/CM AT 25 DEG. C)

DAY	JUL	AUG	SEP
1	---	398	471
2	---	344	471
3	---	329	471
4	---	344	303
5	---	316	338
6	---	384	299
7	---	427	324
8	---	349	324
9	---	355	307
10	---	366	333
11	---	312	398
12	---	316	328
13	---	345	338
14	---	344	311
15	---	355	315
16	---	344	315
17	---	372	315
18	---	320	311
19	---	372	324
20	---	372	324
21	---	355	319
22	329	398	333
23	452	344	324
24	391	412	333
25	405	378	359
26	391	372	343
27	461	461	359
28	372	435	343
29	355	461	364
30	349	461	364
31	339	471	---

TEMPERATURE (DEG. C)
OF WATER

DAY	JUL	AUG	SEP
1	---	25.0	20.0
2	---	22.0	19.0
3	---	24.0	21.0
4	---	24.5	16.0
5	---	17.0	18.0
6	---	21.0	18.0
7	---	20.5	17.0
8	---	22.5	16.0
9	---	25.0	15.0
10	---	24.5	18.0
11	---	22.0	17.0
12	---	23.0	14.0
13	---	22.0	14.0
14	---	21.0	14.0
15	---	21.0	13.0
16	---	19.0	14.0
17	---	20.0	16.0
18	---	19.0	17.0
19	---	18.0	13.0
20	---	20.0	12.0
21	---	23.0	11.0
22	25.0	19.0	13.0
23	21.0	23.0	21.0
24	23.0	22.0	13.0
25	22.0	20.0	13.0
26	23.0	18.0	13.0
27	23.0	19.0	13.0
28	23.0	21.0	11.0
29	24.0	19.0	12.0
30	25.0	18.0	11.0
31	25.0	20.0	---

05385500 SOUTH FORK ROOT RIVER NEAR HOUSTON, MINN.--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	166	---	---	149	124	50	137	136	50
2	163	---	---	150	108	44	135	129	47
3	160	---	---	152	95	39	133	140	50
4	160	---	---	150	84	34	131	168	59
5	240	---	---	147	76	30	130	196	69
6	483	---	---	146	73	29	130	206	72
7	276	---	---	145	70	27	127	198	68
8	199	---	---	144	70	27	125	190	64
9	186	---	---	144	74	29	124	181	61
10	186	---	---	145	80	31	127	168	58
11	181	---	---	144	83	32	124	158	53
12	174	---	---	144	93	36	122	146	48
13	171	---	---	148	113	45	122	144	47
14	168	---	---	143	117	45	122	143	47
15	166	---	---	141	118	45	122	143	47
16	164	---	---	140	119	45	123	143	47
17	161	---	---	143	120	46	123	140	46
18	160	---	---	139	128	48	124	140	47
19	159	---	---	139	149	56	124	138	46
20	156	---	---	140	148	56	124	125	42
21	154	---	---	140	151	57	124	110	37
22	153	170	70	144	173	67	123	95	32
23	156	230	97	144	155	60	123	80	27
24	420	2240	2540	142	138	53	122	65	21
25	183	830	410	326	711	693	122	60	20
26	164	348	154	225	745	453	122	65	21
27	160	300	130	155	360	151	122	70	23
28	157	268	114	146	243	96	123	79	26
29	156	224	94	146	213	84	126	80	27
30	154	166	69	143	183	71	125	73	25
31	150	146	59	140	155	59	---	---	---

05457000 CEDAR RIVER NEAR AUSTIN, MINN.

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER			NOVEMBER			DECEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	62	---	---	97			64	---	---
2	64	---	---	93			64	---	---
3	64	---	---	80			65	---	---
4	67	---	---	76			65	---	---
5	67	---	---	76			67	10	1.8
6	69	---	---	74			67	---	---
7	65	---	---	73			67	---	---
8	69	---	---	74			54	---	---
9	67	---	---	73			61	---	---
10	65	---	---	80			59	---	---
11	93	---	---	78			60	---	---
12	76	---	---	78			61	---	---
13	78	---	---	73			62	---	---
14	80	---	---	65			62	---	---
15	76	---	---	67			67	---	---
16	74	---	---	73			64	---	---
17	73	---	---	69			60	---	---
18	71	---	---	71			64	---	---
19	67	---	---	73			62	---	---
20	65	---	---	74			61	---	---
21	65	---	---	64			59	---	---
22	71	---	---	69			59	---	---
23	69	---	---	74			60	---	---
24	69	---	---	65			58	---	---
25	71	---	---	60			55	---	---
26	65	---	---	64			57	---	---
27	65	---	---	69			59	---	---
28	71	---	---	60			57	---	---
29	78	20	4.2	64			57	---	---
30	76	---	---	65			56	---	---
31	91	---	---	---			58	---	---

	JANUARY			FEBRUARY			MARCH		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	52	---	---	53	---	---	56	---	---
2	55	---	---	52	---	---	56	---	---
3	57	---	---	54	---	---	58	---	---
4	53	---	---	57	---	---	58	---	---
5	52	---	---	55	---	---	58	---	---
6	54	---	---	56	---	---	57	---	---
7	56	---	---	56	---	---	57	---	---
8	57	---	---	53	---	---	57	---	---
9	57	---	---	52	---	---	58	---	---
10	64	14	2.4	54	---	---	58	---	---
11	65	---	---	54	---	---	59	---	---
12	66	---	---	55	---	---	59	---	---
13	60	---	---	54	---	---	60	---	---
14	62	---	---	55	---	---	61	---	---
15	60	---	---	56	---	---	62	---	---
16	58	---	---	56	---	---	66	---	---
17	57	---	---	58	---	---	76	---	---
18	55	---	---	59	---	---	83	29	6.5
19	53	---	---	58	19	3.0	92	---	---
20	52	---	---	57	---	---	119	---	---
21	54	---	---	59	---	---	172	---	---
22	54	---	---	57	---	---	291	---	---
23	54	---	---	55	---	---	714	52	100
24	55	---	---	59	---	---	1210	94	307
25	54	---	---	58	---	---	1200	70	227
26	51	---	---	58	---	---	840	50	113
27	53	---	---	57	---	---	549	42	62
28	54	---	---	56	---	---	353	41	39
29	55	---	---	---	---	---	267	---	---
30	56	---	---	---	---	---	248	---	---
31	55	---	---	---	---	---	257	---	---

05457000 CEDAR RIVER NEAR AUSTIN, MINN.--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

		APRIL			MAY			JUNE	
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	260	---	---	807	---	---	419		
2	265	---	---	675	---	---	346		
3	239	---	---	986	---	---	312		
4	246	---	---	1360	---	---	480		
5	266	---	---	856	---	---	536		
6	436	---	---	623	102	172	387		
7	1280	126	435	508	---	---	307		
8	2070	129	721	471	---	---	270		
9	1630	97	427	483	---	---	260		
10	973	56	147	475	---	---	261		
11	952	60	151	531	---	---	320		
12	1590	100	429	736	---	---	848		
13	1850	91	455	559	---	---	1000		
14	1910	81	418	435	---	---	676		
15	1510	55	224	345	---	---	604		
16	1220	42	138	305	---	---	835		
17	1170	43	136	285	---	---	709		
18	1150	50	155	275	---	---	1080		
19	1520	58	238	349	---	---	2310		
20	1110	41	123	252	75	51	1550		
21	739	32	64	228	---	---	787		
22	597	46	74	233	---	---	736		
23	1170	80	253	271	---	---	792		
24	1450	100	391	331	---	---	574		
25	1010	74	202	304	---	---	453		
26	900	58	141	929	---	---	420		
27	1060	69	197	1020	---	---	656		
28	3130	390	3490	488	---	---	701		
29	2720	272	2070	568	---	---	454		
30	1210	152	497	739	---	---	628		
31	---	---	---	579	---	---	---		

		JULY			AUGUST			SEPTEMBER	
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	589	---	---	78	---	---	80	---	---
2	429	---	---	85	---	---	77	---	---
3	349	---	---	77	---	---	77	---	---
4	299	---	---	76	23	4.7	73	---	---
5	275	---	---	74	---	---	76	---	---
6	268	---	---	73	---	---	71	---	---
7	245	---	---	70	---	---	69	---	---
8	225	115	70	69	---	---	68	8	1.5
9	213	---	---	69	---	---	69	---	---
10	201	---	---	123	---	---	71	---	---
11	192	---	---	84	---	---	80	---	---
12	180	---	---	80	---	---	71	---	---
13	170	---	---	77	---	---	68	---	---
14	168	---	---	71	---	---	64	---	---
15	162	---	---	72	---	---	66	---	---
16	150	---	---	70	---	---	67	---	---
17	143	---	---	69	---	---	66	---	---
18	137	---	---	68	---	---	67	---	---
19	126	---	---	72	---	---	67	---	---
20	120	---	---	71	---	---	67	---	---
21	115	---	---	133	---	---	65	---	---
22	112	---	---	133	---	---	64	---	---
23	111	---	---	106	---	---	64	---	---
24	117	---	---	139	---	---	62	---	---
25	107	---	---	340	---	---	62	---	---
26	98	---	---	172	---	---	61	---	---
27	93	---	---	114	---	---	59	---	---
28	88	---	---	98	---	---	59	---	---
29	87	---	---	94	---	---	62	---	---
30	84	---	---	87	---	---	62	---	---
31	82	---	---	81	---	---	---	---	---

05457000 CEDAR RIVER NEAR AUSTIN, MINN.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	TEMPER- ATURE (DEG C)	INSTAN- TANEOUS DIS- CHARGE (CFS)	SUS- PENDED SEDI- MENT (MG/L)	SUS- PENDED SEDI- MENT DIS- CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .002 MM	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .008 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM
MAR.										
25...	1200	12.0	1080	68	198	59	69	79	86	92
APR.										
08...	1630	1.0	2080	128	719	54	67	72	86	95
24...	1040	9.0	1550	118	494	--	75	88	94	96

DATE	TEMPER- ATURE (DEG C)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)
OCT.		
29...	14.5	608
DEC.		
05...	3.5	706
JAN.		
10...	3.0	646
FEB.		
19...	1.5	834
MAR.		
18...	1.5	850
23...	11.0	320
24...	--	266
25...	--	282
26...	--	314
27...	--	410
28...	--	421
APR.		
07...	3.0	266
08...	1.0	275
09...	1.0	336
10...	1.5	382
11...	2.0	384

DATE	TEMPER- ATURE (DEG C)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)
APR.		
12...	2.0	320
13...	2.0	318
14...	3.0	310
15...	2.5	425
16...	4.0	425
17...	5.0	488
18...	4.0	452
19...	3.5	457
20...	4.0	494
21...	4.0	526
22...	5.0	538
23...	6.5	515
24...	8.5	484
25...	9.0	504
26...	7.0	508
27...	6.0	520
28...	7.0	338
29...	6.5	451
30...	7.0	332

DATE	TEMPER- ATURE (DEG C)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)
MAY		
06...	14.0	603
20...	23.5	571
JULY		
08...	24.5	494

DATE	TEMPER- ATURE (DEG C)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)
AUG.		
04...	26.0	609
SEP.		
08...	23.5	795

WATER QUALITY DATA AT STREAMFLOW STATIONS

Periodic field determinations of water temperature and specific conductance are made at many stream-gaging stations other than regular water-quality stations. These data are usually collected at monthly intervals during routine visits to the station. Additional data for each station are published in Part 1 of this report.

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
04010500 PIGEON RIVER AT MIDDLE FALLS, NEAR GRAND PORTAGE, MINN.							
NOV. 06, 1974...	634	2.5	85	APR. 09.........	209	0	85
DEC. 11.........	388	.5	55	MAY 29.........	718	16.5	80
JAN. 22, 1975...	430	.5	80	AUG. 20.........	81	16.5	87
MAR. 05.........	193	.5	105				
04014500 BAPTISM RIVER NEAR BEAVER BAY, MINN.							
OCT. 31, 1974...	76	9	120	APR. 23.........	1050	.5	60
DEC. 10.........	28	.5	115	MAY 28.........	133	15	77
JAN. 21, 1975...	58	.5	90	JULY 09.........	163	18	60
MAR. 04.........	28	.5	125	AUG. 19.........	5.3	18	152
APR. 08.........	38	0	100	SEPT. 30.........	59	10.5	135
04015330 KNIFE RIVER NEAR TWO HARBORS, MINN.							
NOV. 05, 1974...	41	3.5	160	APR. 29.........	2170	1.5	<50
DEC. 12.........	5.2	.5	230	MAY 01.........	996	5	<50
JAN. 23, 1975...	29	.5	150	MAY 05.........	619	5.5	60
MAR. 07.........	10	.5	230	MAY 07.........	562	8.5	55
APR. 10..........	30	.5	150	MAY 08.........	475	8	60
APR. 16.........	90	0	95	MAY 29.........	29	20	140
APR. 22.........	832	1	60	JULY 11.........	29	18.5	130
APR. 24.........	2080	1	<50	AUG. 21.........	3.9	17.5	208
APR. 25.........	1760	1	<50				
04015500 SECOND CREEK NEAR AURORA, MINN.							
OCT. 25, 1974...	23	3.5	600	MAY 22.........	18	20	700
DEC. 05.........	34	.5	500	JULY 11.........	55	15	700
JAN. 16, 1975...	23	.5	500	AUG. 19.........	15	18	850
APR. 10.........	31	.5	620	SEPT. 26.........	23	11	810
APR. 23.........	80	4	340				
04016000 PARTRIDGE RIVER NEAR AURORA, MINN.							
OCT. 25, 1974...	53	4.5	445	MAY 01.........	940	4	240
DEC. 05.........	56	1	420	MAY 22.........	156	21	200
JAN. 15, 1975...	28	.5	--	JULY 11.........	233	19.5	268
MAR. 03.........	32	0	585	AUG. 19.........	21	16	740
APR. 11.........	64	.5	550	SEPT. 29.........	52	12.5	460
APR. 23.........	175	5	320				

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
04016500 ST. LOUIS RIVER NEAR AURORA, MINN.							
OCT. 25, 1974...	93	4	160	APR. 23.........	651	4	180
DEC. 06.........	88	.5	140	MAY 23.........	361	20	90
JAN. 16, 1975...	60	0	110	JULY 11.........	515	19	148
MAR. 04.........	52	0	315	AUG. 18.........	41	18.5	495
APR. 11.........	90	.5	360	SEPT. 29.........	75	12.5	278
04018750 ST. LOUIS RIVER AT FORBES, MINN.							
NOV. 05, 1974...	464	4.5	220	APR. 30.........	3920	3.5	153
DEC. 11.........	181	.5	240	MAY 15.........	1700	11	100
JAN. 15, 1975...	125	0	215	JUNE 26.........	1030	21	125
MAR. 05.........	113	0	240	AUG. 15.........	136	21	280
APR. 02.........	162	0	143	SEPT. 17.........	198	14	250
APR. 24.........	2830	3.5	100				
04018900 EAST TWO RIVER NEAR IRON JUNCTION, MINN.							
OCT. 04, 1974...	12	7.5	--	APR. 18.........	313	1	--
NOV. 07.........	29	3	--	JUNE 19.........	50	18	--
NOV. 22.........	17	0	--	JULY 21.........	16	24	--
DEC. 26.........	11	0	--	AUG. 08.........	13	23	--
JAN. 23, 1975...	12	0	--	AUG. 28.........	17	16	--
FEB. 28.........	6.5	0	--				
04019000 WEST TWO RIVER NEAR IRON JUNCTION, MINN.							
OCT. 04, 1974...	7.5	8	--	APR. 23.........	456	3	--
NOV. 07.........	37	3	--	JUNE 19.........	91	18	--
DEC. 27.........	9.2	0	--	JULY 21.........	22	23	--
FEB. 07, 1975...	9.4	0	--	JULY 31.........	13	24	--
FEB. 13.........	11	.5	--	AUG. 21.........	11	18	--
MAR. 05.........	12	0	--				
04019300 WEST SWAN RIVER NEAR SILICA, MINN.							
OCT. 24, 1974...	.86	6	265	APR. 21.........	169	.5	<50
DEC. 11.........	.20	.5	330	MAY 27.........	3.1	15	150
JAN. 20, 1975...	1.2	.5	<50	JULY 14.........	2.4	17.5	200
MAR. 06.........	1.1	.5	360	AUG. 18.........	.24	13	265
APR. 07.........	2.7	.5	--				
04024000 ST. LOUIS RIVER AT SCANLON, MINN.							
OCT. 30, 1974...	1070	9	240	APR. 25.........	24300	3	100
DEC. 09.........	877	.5	220	MAY 27.........	2270	20.5	165
JAN. 21, 1975...	1450	.5	220	JULY 08.........	6580	22.5	115
MAR. 03.........	1330	0	--	AUG. 18.........	881	22	205
APR. 07.........	1450	1.5	235	SEPT. 29.........	1100	14	300

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

05033900 PELICAN RIVER AT DETROIT LAKES, MINN.

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
DEC. 05, 1974...	4.5	0	440	MAY 09.........	69	21	470
JAN. 08, 1975...	6.4	.5	480	JUNE 12.........	21	19	450
FEB. 12.........	6.3	0	370	JUNE 30.........	104	21.5	400
MAR. 19.........	11	.5	560	AUG. 07.........	18	18.5	460
APR. 17.........	117	0	350	SEPT. 08.........	9.9	12	480
APR. 23.........	129	3.5	370				

05034100 PELICAN RIVER AT DETROIT LAKE OUTLET NEAR DETROIT LAKES, MINN.

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
NOV. 01, 1974...	4.5	7.5	320	APR. 23.........	80	3.5	300
DEC. 05.........	8.7	2.5	350	MAY 09.........	107	12.5	380
JAN. 08, 1975...	15	3	380	JUNE 12.........	31	20	375
FEB. 12.........	16	1.5	320	JUNE 30.........	80	23	350
MAR. 19.........	20	2	460	AUG. 07.........	39	23.5	320
APR. 17.........	39	2	370	SEPT. 08.........	15	17	345

05035500 ST. CLAIR LAKE OUTLET NEAR DETROIT LAKES, MINN.

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
NOV. 01, 1974...	5.2	8.5	620	APR. 23.........	29	0	330
DEC. 05.........	5.2	4	820	MAY 09.........	0	2	430
JAN. 08, 1975...	3.9	1	880	JUNE 12.........	8.0	20	500
FEB. 13.........	5.8	.5	900	JUNE 30.........	29	22.5	500
MAR. 19.........	5.2	1	880	AUG. 07.........	8.6	22.5	610
APR. 17.........	22	1.5	470	SEPT. 08.........	8.2	14.5	600

05035600 PELICAN RIVER AT MUSKRAT LAKE OUTLET NEAR DETROIT LAKES, MINN.

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
NOV. 01, 1974...	11	8	485	APR. 23.........	106	3.5	320
DEC. 05.........	14	1.5	465	MAY 09.........	143	12	350
JAN. 08, 1975...	19	1	500	JUNE 12.........	37	17	410
FEB. 13.........	23	.5	430	AUG. 07.........	43	24	350
MAR. 20.........	27	1.5	540	SEPT. 08.........	24	17	325
APR. 17.........	56	2	450				

05037100 PELICAN RIVER AT SALLIE LAKE OUTLET NEAR DETROIT LAKES, MINN.

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
NOV. 11, 1974...	11	7.5	300	JUNE 12.........	44	18.5	400
DEC. 05.........	13	1.5	420	JUNE 30.........	96	22	330
JAN. 09, 1975...	23	1	430	JULY 09.........	121	24	360
FEB. 13.........	25	1.5	320	JULY 17.........	108	24.5	370
MAR. 20.........	26	1.5	460	AUG. 08.........	54	21.5	400
APR. 17.........	60	3	430	AUG. 18.........	29	21.5	360
APR. 23.........	80	3.5	390	SEPT. 08.........	25	18.5	360
MAY 09.........	130	10	400				

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
05040500 PELICAN RIVER NEAR FERGUS FALLS, MINN.							
OCT. 18, 1974...	44	7.5	480	APR. 23.........	267	4.5	400
NOV. 25.........	42	0	500	MAY 22.........	258	16	410
JAN. 03, 1975...	29	0	550	JUNE 27.........	190	23.5	380
FEB. 07.........	41	0	--	JULY 17.........	221	27.5	360
MAR. 19.........	72	0	550	AUG. 08.........	195	21.5	485
APR. 18.........	352	0.5	360	SEPT. 16.........	126	15.5	430
05046000 OTTER TAIL RIVER BELOW ORWELL DAM NEAR FERGUS FALLS, MINN.							
OCT. 19, 1974...	300	9.5	375	APR. 28.........	912	6.5	400
NOV. 25.........	263	2	400	MAY 22.........	1060	18.5	360
JAN. 03, 1975...	191	2	470	JUNE 27.........	1000	24	320
MAR. 14.........	334	2	450	AUG. 08.........	679	23.5	340
APR. 17.........	449	3	390	SEPT. 16.........	330	17	310
05050000 BOIS DE SIOUX RIVER NEAR WHITE ROCK, S. DAK.							
APR. 17, 1975...	1.2	0	410	JUNE 27.........	388	25.5	650
APR. 21.........	1.3	6.5	590	JULY 01.........	416	26.5	760
APR. 24.........	1.1	8	530	JULY 03.........	269	29	380
MAY 06.........	1.2	14.5	870	JULY 16.........	477	27	560
MAY 30.........	1.3	17	--	AUG. 05.........	4.0	24.5	730
JUNE 03.........	1.1	18.5	1150	SEPT. 16.........	10	20.5	950
JUNE 23.........	2.4	24	1180				
05061000 BUFFALO RIVER NEAR HAWLEY, MINN.							
NOV. 13, 1974...	31	0	680	JUNE 05.........	96	18	525
DEC. 10.........	25	.5	650	JULY 01.........	1980	22	360
JAN. 29, 1975...	16	0	580	JULY 03.........	1730	25	435
MAR. 14.........	26	0	540	JULY 08.........	1060	24	460
APR. 15.........	670	1	360	JULY 24.........	155	22	610
APR. 19.........	1020	2	400	AUG. 27.........	35	15	700
APR. 30.........	514	4	590				
05061500 SOUTH BRANCH BUFFALO RIVER AT SABIN, MINN.							
NOV. 13, 1974...	13	0	960	JUNE 05.........	20	15.5	860
DEC. 11.........	4.3	0	640	JULY 04.........	3440	29	360
APR. 15, 1975...	1330	1.5	360	JULY 24.........	46	20	700
APR. 17.........	1070	2.5	460	AUG. 27.........	4.5	15	910

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

05062000 BUFFALO RIVER NEAR DILWORTH, MINN.

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
NOV. 14, 1974...	30	0	710	MAY 01.........	1000	6	635
DEC. 10.........	30	0	780	JUNE 04.........	124	18.5	625
JAN. 28, 1975...	18	0	725	JULY 02.........	13400	24.5	250
MAR. 12.........	22	0	700	JULY 05.........	8340	27	340
APR. 15.........	960	1	380	JULY 08.........	2980	25	440
APR. 17.........	2570	1	380	JULY 18.........	625	25	610
APR. 23.........	1670	5.5	560	AUG. 27.........	38	18	690

05062500 WILD RICE RIVER AT TWIN VALLEY, MINN.

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
NOV. 12, 1974...	112	1	550	APR. 19.........	2730	1	415
DEC. 16.........	64	.5	560	APR. 29.........	1730	5.5	420
JAN. 28, 1975...	49	0	590	JUNE 03.........	272	19	400
MAR. 10.........	62	0	560	JULY 01.........	3430	19	--
APR. 14.........	1040	.5	345	JULY 15.........	909	23	470
APR. 17.........	1770	1	--	AUG. 26.........	101	18	460

05064000 WILD RICE RIVER AT HENDRUM, MINN.

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
NOV. 14, 1974...	90	0	500	JUNE 04.........	343	18.5	450
JAN. 27, 1975...	60	0	250	JULY 01.........	4160	22	290
MAR. 11.........	77	0	470	JULY 04.........	7470	25.5	365
APR. 17.........	3580	.5	290	JULY 07.........	6970	27	405
APR. 18.........	4320	1	395	JULY 10.........	6820	21	375
APR. 21.........	5240	4	562	JULY 14.........	3110	21	480
APR. 24.........	3950	8	565	JULY 18.........	1380	25	560
APR. 29.........	3520	6.5	510	JULY 22.........	647	23	610
MAY 08.........	1360	12.5	475	AUG. 26.........	149	17	510
MAY 14.........	1010	15	455				

05067500 MARSH RIVER NEAR SHELLY, MINN.

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
NOV. 14, 1974...	4.0	0	710	MAY 01.........	715	4.5	515
APR. 16, 1975...	885	.5	285	JUNE 02.........	6.3	19	880
APR. 18.........	1820	1.5	345	JULY 02.........	1090	20.5	415
APR. 22.........	1110	4.5	450	JULY 04.........	1110	24	420

05069000 SANDHILL RIVER AT CLIMAX, MINN.

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
OCT. 02, 1974...	13	5	650	MAY 08.........	262	13	585
NOV. 14.........	30	0	660	MAY 14.........	161	14.5	600
DEC. 11.........	17	0	810	JUNE 02.........	56	16.5	620
JAN. 27, 1975...	10	0	775	JULY 02.........	246	23	450
MAR. 11.........	22	0	740	JULY 04.........	280	25	480
APR. 16.........	393	.5	290	JULY 09.........	356	23	470
APR. 22.........	1690	4	430	JULY 21.........	97	25	--
APR. 24.........	846	7.5	415	AUG. 01.........	61	24	590
APR. 28.........	1720	4	390	AUG. 25.........	26	19.5	600

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	DISCHARGE (CFS)	TEMPERA-TURE (°C)	SPECIFIC CONDUC-TANCE (MICRO-MHOS)	DATE	DISCHARGE (CFS)	TEMPERA-TURE (°C)	SPECIFIC CONDUC-TANCE (MICRO-MHOS)
05074500 RED LAKE RIVER NEAR RED LAKE, MINN.							
NOV. 20, 1974...	941	0.5	270	MAY 05.........	325	6	305
JAN. 06, 1975...	873	1.5	300	JUNE 16.........	1520	17	275
FEB. 10.........	723	3	290	JULY 03.........	195	25.5	270
MAR. 31.........	611	.5	290	SEPT. 08.........	1460	17	275
APR. 17.........	319	2	320				
05075000 RED LAKE RIVER AT HIGH LANDING NEAR GOODRIDGE, MINN.							
OCT. 09, 1974...	1460	7.5	290	APR. 21.........	1790	2.5	250
NOV. 20.........	1020	.5	280	MAY 06.........	1470	11.5	280
JAN. 09, 1975...	850	.5	300	JUNE 16.........	1520	18.5	290
FEB. 11.........	733	0	--	JULY 02.........	3290	21	240
MAR. 31.........	657	.5	295	JULY 08.........	4030	24	240
APR. 17.........	1620	2	390	JULY 30.........	1690	24.5	270
05076000 THIEF RIVER NEAR THIEF RIVER FALLS, MINN.							
OCT. 08, 1974...	22	7.5	580	APR. 23.........	2650	4	280
NOV. 20.........	129	.5	360	MAY 06.........	2220	10.5	350
JAN. 07, 1975...	2.8	.5	1100	JUNE 18.........	186	21.5	480
FEB. 11.........	2.1	0	925	JULY 02.........	3180	22	220
APR. 01.........	40	.5	1580	JULY 03.........	2970	23	220
APR. 17.........	977	.5	310	JULY 29.........	411	25.5	420
APR. 19.........	1550	.5	310	SEPT. 09.........	252	14	520
05077700 RUFFY BROOK NEAR GONVICK, MINN.							
OCT. 10, 1974...	3.4	8	680	APR. 18.........	270	1	225
NOV. 22.........	4.0	.5	600	APR. 22.........	127	3	280
JAN. 09, 1975...	3.1	.5	590	MAY 08.........	35	13.5	395
FEB. 14.........	4.3	0	610	JUNE 19.........	7.2	15	510
APR. 03.........	7.4	.5	560	AUG. 05.........	3.5	17	470
APR. 15.........	55	0	275	SEPT. 11.........	8.0	0	540
05078000 CLEARWATER RIVER AT PLUMMER, MINN.							
OCT. 09, 1974...	110	9	675	APR. 22.........	2100	2.5	300
NOV. 21.........	112	.5	490	MAY 07.........	1210	10	425
JAN. 08, 1975...	80	.5	480	JUNE 17.........	156	19	505
FEB. 13.........	66	0	335	JULY 08.........	2020	22.5	430
MAR. 25.........	83	0	480	JULY 30.........	151	27.5	446
APR. 18.........	2150	.5	260	SEPT. 10.........	94	17	520

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

05078230 LOST RIVER AT OKLEE, MINN.

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
OCT. 10, 1974...	33	9	860	APR. 21.........	1500	4	345
NOV. 21.........	27	.5	750	APR. 24.........	1390	5	435
JAN. 09, 1975...	14	.5	610	MAY 06.........	446	13	610
FEB. 13.........	15	0	580	JUNE 19.........	31	19	790
APR. 02.........	25	.5	595	JULY 08.........	405	22	520
APR. 15.........	764	1	275	AUG. 05.........	16	22.7	530
APR. 18.........	1990	1.5	420	SEPT. 11.........	4.4	12.5	620

05078500 CLEARWATER RIVER AT RED LAKE FALLS, MINN.

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
OCT. 03, 1974...	74	9	600	APR. 15.........	1970	.5	250
NOV. 15.........	72	0	600	APR. 19.........	7510	1	358
DEC. 12.........	109	0	--	MAY 07.........	2400	12.5	480
JAN. 08, 1975...	112	.5	540	JUNE 17.........	277	18	570
FEB. 13.........	101	0	320	JULY 31.........	218	25.6	490
APR. 01.........	162	.5	--	SEPT. 10.........	115	16.5	580

05079000 RED LAKE RIVER AT CROOKSTON, MINN.

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
OCT. 03, 1974	1220	7	320	APR. 19.........	13600	1	305
NOV. 15.........	1030	0	365	APR. 23.........	10800	4.5	360
DEC. 12.........	839	0	385	MAY 07.........	6730	13	395
JAN. 08, 1975...	1020	.5	340	JUNE 17.........	2000	19	360
FEB. 12.........	890	0	365	JULY 04.........	12100	22	270
MAR. 26.........	1010	.5	470	JULY 31.........	2440	26	345
APR. 16.........	5250	1	250	SEPT. 10.........	2030	15.5	310

05087500 MIDDLE RIVER AT ARGYLE, MINN.

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
OCT. 08, 1974...	0.31	6.5	540	APR. 23.........	486	2	330
NOV. 21.........	.40	.5	625	MAY 06.........	264	9.5	455
JAN. 07, 1975...	.97	.5	780	JUNE 18.........	16	17.5	620
FEB. 12.........	.37	0	390	JULY 03.........	4050	--	203
APR. 02.........	1.8	.5	560	JULY 07.........	1700	25	315
APR. 15.........	95	.5	285	JULY 29.........	39	24.5	540
APR. 16.........	226	.5	280	SEPT. 09.........	2.1	16	610

05094000 SOUTH BRANCH TWO RIVERS AT LAKE BRONSON, MINN.

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
OCT. 01, 1974...	2.2	9	425	APR. 15.........	668	3.5	550
NOV. 14.........	4.2	.5	460	MAY 05.........	1250	10.5	365
DEC. 19.........	2.8	2	485	JUNE 18.........	51	19.5	430
JAN. 07, 1975...	2.5	2	500	JULY 29.........	16	24	460
FEB. 11.........	1.8	1.5	535	SEPT. 09.........	5.5	14	440
MAR. 27.........	1.2	.5	--				

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

05104500 ROSEAU RIVER BELOW SOUTH FORK NEAR MALUNG, MINN.

DATE	DISCHARGE (CFS)	TEMPERA-TURE (°C)	SPECIFIC CONDUC-TANCE (MICRO-MHOS)	DATE	DISCHARGE (CFS)	TEMPERA-TURE (°C)	SPECIFIC CONDUC-TANCE (MICRO-MHOS)
OCT. 03, 1974...	24	5.5	360	APR. 17.........	1900	.5	--
NOV. 21.........	56	.5	360	APR. 19.........	2580	.5	230
DEC. 19.........	15	.5	480	APR. 24.........	3600	5.5	250
FEB. 12, 1975...	11	.5	555	MAY 02.........	2170	5	270
MAR. 19.........	8.0	0	485	SEPT. 15.........	7.6	15	410

05106000 SPRAGUE CREEK NEAR SPRAGUE, MANITOBA

DATE	DISCHARGE (CFS)	TEMPERA-TURE (°C)	SPECIFIC CONDUC-TANCE (MICRO-MHOS)	DATE	DISCHARGE (CFS)	TEMPERA-TURE (°C)	SPECIFIC CONDUC-TANCE (MICRO-MHOS)
OCT. 02, 1974...	20	5	240	APR. 16.........	203	.5	198
NOV. 21.........	16	.5	310	APR. 19.........	311	3	280
NOV. 25.........	11	.5	--	APR. 24.........	442	4.5	300
DEC. 17.........	2.7	0	485	JUNE 11.........	152	13	240
FEB. 11, 1975...	2.4	.5	620	SEPT. 10.........	6.4	13	380
MAR. 19.........	1.8	0	190				

05107500 ROSEAU RIVER AT ROSS, MINN.

DATE	DISCHARGE (CFS)	TEMPERA-TURE (°C)	SPECIFIC CONDUC-TANCE (MICRO-MHOS)	DATE	DISCHARGE (CFS)	TEMPERA-TURE (°C)	SPECIFIC CONDUC-TANCE (MICRO-MHOS)
OCT. 03, 1974...	68	7.5	370	APR. 22.........	2380	3	260
NOV. 20.........	86	.5	400	MAY 01.........	3160	4.5	280
DEC. 18.........	25	0	505	JUNE 11.........	539	15.5	345
FEB. 11, 1975...	21	.5	550	SEPT. 10.........	16	15.5	--
MAR. 19.........	15	0	565				

05112000 ROSEAU RIVER BELOW STATE DITCH 51 NEAR CARIBOU, MINN.

DATE	DISCHARGE (CFS)	TEMPERA-TURE (°C)	SPECIFIC CONDUC-TANCE (MICRO-MHOS)	DATE	DISCHARGE (CFS)	TEMPERA-TURE (°C)	SPECIFIC CONDUC-TANCE (MICRO-MHOS)
OCT. 01, 1974...	97	6	380	APR. 24.........	1420	6	260
NOV. 13.........	110	.5	400	APR. 30.........	2100	4.5	265
DEC. 17.........	42	.5	630	JUNE 10.........	1300	15	355
FEB. 04, 1975...	29	.5	680	JULY 22.........	1470	22.5	380
MAR. 18.........	15	0	545	SEPT. 09.........	33	13	440

05124480 KAWISHIWI RIVER NEAR ELY, MINN.

DATE	DISCHARGE (CFS)	TEMPERA-TURE (°C)	SPECIFIC CONDUC-TANCE (MICRO-MHOS)	DATE	DISCHARGE (CFS)	TEMPERA-TURE (°C)	SPECIFIC CONDUC-TANCE (MICRO-MHOS)
OCT. 22, 1974...	107	7	<50	MAY 20.........	666	18	<50
JAN. 22, 1975...	99	0	<50	JULY 10.........	143	22	<50
FEB. 26.........	83	0	<50	AUG. 12.........	44	24	<50
APR. 08.........	60	2	<50	SEPT. 24.........	41	12.5	<50

05124990 FILSON CREEK NEAR ELY, MINN.

DATE	DISCHARGE (CFS)	TEMPERA-TURE (°C)	SPECIFIC CONDUC-TANCE (MICRO-MHOS)	DATE	DISCHARGE (CFS)	TEMPERA-TURE (°C)	SPECIFIC CONDUC-TANCE (MICRO-MHOS)
OCT. 17, 1974...	.90	4.5	<50	APR. 28.........	94	--	150
OCT. 30.........	3.8	8	<50	APR. 30.........	71	2	140
DEC. 02.........	1.2	.5	<50	MAY 06.........	36	6	<50
JAN. 20, 1975...	.50	.5	55	MAY 20.........	8.0	17	<50
FEB. 18.........	.86	0	--	JULY 09.........	2.3	21.5	<50
APR. 07.........	.62	.5	68	AUG. 13.........	.01	22	--
APR. 17.........	6.5	.5	<50	SEPT. 25.........	2.7	11.5	<50
APR. 22.........	34	.5	<50				

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
05126000 DUNKA RIVER NEAR BABBITT, MINN.							
FEB. 12, 1975...	3.4	0	--	MAY 19.........	65	13	80
APR. 04.........	2.6	0	390	JULY 08.........	79	21	131
APR. 18.........	118	1	120	SEPT. 22.........	62	10.5	170
APR. 30.........	321	3.5	115				
05126500 BEAR ISLAND RIVER NEAR ELY, MINN.							
MAR. 19, 1975...	21	.5	55	MAY 20.........	151	17	50
APR. 07.........	17	.5	60	JULY 10.........	97	20	--
APR. 22.........	80	1	60	AUG. 13.........	8.7	23	--
APR. 28.........	301	4	175	SEPT. 26.........	19	11	<50
05127000 KAWISHIWI RIVER NEAR WINTON, MINN.							
OCT. 23, 1974...	703	6.5	50	SEPT. 26.........	696	13	51
MAY 05, 1975...	5090	5	52				
05127205 BURNTSIDE RIVER NEAR ELY, MINN.							
OCT. 23, 1974...	32	7	50	APR. 22.........	82	6	50
DEC. 04.........	27	.5	<50	APR. 29.........	208	3	170
JAN. 21, 1975...	38	0	<50	MAY 22.........	149	14.5	<50
FEB. 27.........	32	0	<50	JULY 08.........	95	23.5	<50
APR. 09.........	29	.5	60	AUG. 14.........	21	19.5	105
APR. 18.........	53	2	50	SEPT. 23.........	14	11	52
05127207 BJORKMAN'S CREEK NEAR ELY, MINN.							
OCT. 24, 1974...	.36	2.5	60	APR. 22.........	12	.5	<50
DEC. 04.........	.13	.5	70	APR. 29.........	12	4	--
JAN. 21, 1975...	.06	.5	70	MAY 21.........	1.0	17	52
APR. 09.........	.21	.5	75	JULY 09.........	.42	15.5	50
APR. 17.........	2.4	.5	50	SEPT. 23.........	.18	10	75
05127210 ARMSTRONG CREEK NEAR ELY, MINN.							
OCT. 24, 1974...	1.6	3	150	APR. 22.........	25	.5	85
DEC. 04.........	1.1	.5	170	MAY 21.........	4.3	18	100
JAN. 23, 1975...	1.1	.5	160	JULY 08.........	4.6	19.5	137
FEB. 27.........	.90	0	<50	AUG. 14.........	.39	18	190
APR. 09.........	.90	.5	205	SEPT. 23.........	1.9	9.5	184
APR. 18.........	12	.5	100				

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
05127215 LONGSTORFF CREEK NEAR ELY, MINN.							
OCT. 24, 1974	.68	4	130	APR. 22	33	.5	75
DEC. 03	1.3	.5	<50	APR. 30	62	3	125
JAN. 21, 1975	3.0	0	<50	MAY 21	8.9	20	84
FEB. 27	.98	0	<50	JULY 09	7.0	18	84
APR. 09	1.9	.5	115	AUG. 14	.26	15	380
APR. 18	19	.5	60	SEPT. 23	2.9	10	134
05127219 SHAGAWA LAKE TRIBUTARY AT ELY, MINN.							
APR. 21, 1975	.84	4	300	APR. 22	.12	.5	190
05127220 BURGO CREEK NEAR ELY, MINN.							
OCT. 24, 1974	1.6	2.5	60	APR. 29	19	2	130
DEC. 03	1.3	0	80	MAY 05	9.8	10	135
JAN. 21, 1975	.38	.5	65	MAY 21	2.0	20	60
APR. 09	.73	.5	100	JULY 09	.49	16.5	85
APR. 17	17	.5	--	AUG. 14	.04	15.5	460
APR. 22	22	4	<50	SEPT. 23	.43	10	130
05127230 SHAGAWA RIVER AT ELY, MINN.							
OCT. 24, 1974	43	6	55	APR. 29	284	3.5	--
DEC. 03	55	1	75	MAY 21	212	15.5	70
JAN. 21, 1975	53	.5	<50	JULY 09	131	22.5	67
FEB. 27	48	.5	70	AUG. 14	29	23	180
APR. 10	38	1.5	65	SEPT. 23	23	13.5	73
05127500 BASSWOOD RIVER NEAR WINTON, MINN.							
JAN. 30, 1975	1020	0	--	AUG. 13	628	23	--
APR. 08	667	3	64				
05128000 NAMAKAN RIVER AT OUTLET OF LAC LA CROIX, ONTARIO							
OCT. 02, 1974	4190	7	--	SEPT. 12, 1975	1920	15	--
05129000 VERMILION RIVER BELOW VERMILION LAKE, NEAR TOWER, MINN.							
OCT. 01, 1974	113	7.5	65	APR. 30	1080	2.5	90
NOV. 01	184	7	60	MAY 07	1550	5	52
DEC. 05	217	1.5	70	JUNE 25	916	21.5	65
JAN. 08, 1975	186	1	70	AUG. 13	241	23	70
FEB. 20	186	2	--	SEPT. 17	128	15	60
APR. 02	202	2	60				

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
05130500 STURGEON RIVER NEAR CHISHOLM, MINN.							
NOV. 01, 1974...	118	7	90	APR. 03.........	41	.5	133
DEC. 20.........	41	0	100	MAY 14.........	417	13	50
JAN. 08, 1975...	34	0	95	JUNE 26.........	137	22	80
FEB. 20.........	28	.5	120	SEPT. 18.........	47	14	95
05131000 DARK RIVER NEAR CHISHOLM, MINN.							
OCT. 04, 1974...	20	7	--	FEB. 21.........	14	.5	200
OCT. 28.........	17	7	--	APR. 11.........	22	1	--
NOV. 11.........	26	4	--	JUNE 16.........	94	14	--
NOV. 22.........	21	1	--	JUNE 27.........	43	19	--
DEC. 12.........	15	0	--	AUG. 01.........	17	24	--
JAN. 16, 1975...	16	0	--	AUG. 21.........	19	16	--
05131500 LITTLE FORK RIVER AT LITTLE FORK, MINN.							
OCT. 09, 1974...	1270	6.5	140	MAY 01.........	16500	2.5	140
NOV. 19.........	898	.5	110	MAY 13.........	4460	14	75
JAN. 07, 1975...	232	0	190	JUNE 24.........	1610	19	115
FEB. 19.........	199	.5	215	AUG. 05.........	449	23	170
APR. 01.........	270	0	225	SEPT. 15.........	291	15	175
APR. 28.........	16100	2	80				
05132000 BIG FORK RIVER AT BIG FALLS, MINN.							
OCT. 08, 1974...	1040	5.5	175	MAY 02.........	9190	3.5	190
NOV. 18.........	572	.5	180	MAY 12.........	3960	14	135
JAN. 06, 1975...	323	.5	270	JUNE 23.........	1340	20	185
FEB. 18.........	218	.5	295	AUG. 04.........	1010	23.5	210
MAR. 31.........	269	0	325	SEPT. 15.........	467	13	230
05133500 RAINY RIVER AT MANITOU RAPIDS, MINN.							
NOV. 22, 1974...	17400	1.5	105	SEPT. 06.........	5530	15	110
JUNE 24, 1975...	19800	19	100				
05134200 RAPID RIVER NEAR BAUDETTE, MINN.							
OCT. 04, 1974...	34	8.5	240	APR. 21.........	2110	.5	100
NOV. 19.........	121	.5	190	APR. 25.........	3650	3.5	115
DEC. 16.........	17	0	330	JUNE 12.........	383	17	140
FEB. 13, 1975...	14	.5	430	SEPT. 11.........	28	12	--
MAR. 20.........	14	0	455				

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 to SEPTEMBER 1975

05139500 WEST BRANCH WARROAD RIVER NEAR WARROAD, MINN.

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
OCT. 04, 1974...	11	6.5	370	APR. 18.........	369	.5	285
NOV. 19.........	17	.5	375	APR. 22.........	747	1	185
DEC. 17.........	4.4	0	515	MAY 02.........	576	6	200
FEB. 18, 1975...	3.8	.5	350	JUNE 12.........	50	14	300
MAR. 20.........	5.9	0	455	SEPT. 10.........	1.8	14.5	500
APR. 16.........	124	.5	165				

05140000 BULLDOG RUN NEAR WARROAD, MINN.

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
NOV. 19, 1974...	.02	.5	950	APR. 22.........	70	1	250
APR. 16, 1975...	67	.5	295	JUNE 12.........	1.5	14	580
APR. 18.........	140	.5	165				

05140500 EAST BRANCH WARROAD RIVER NEAR WARROAD, MINN.

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
OCT. 04, 1974...	14	7	295	APR. 16.........	59	.5	275
NOV. 19.........	21	.5	290	APR. 18.........	119	.5	350
DEC. 17.........	5.6	0	405	APR. 22.........	204	.5	160
FEB. 17, 1975...	3.1	.5	435	JUNE 12.........	34	14	290
MAR. 20.........	3.1	0	445	SEPT. 10.........	1.7	13.5	440

05211000 MISSISSIPPI RIVER AT GRAND RAPIDS, MINN.

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
NOV. 26, 1974...	1780	1.5	285	MAY 23.........	3690	19.5	225
JAN. 24, 1975...	1800	.5	--	MAY 30.........	3010	18.5	260
MAR. 06.........	2020	1	342	JULY 07.........	2600	27	250
APR. 08.........	2010	1	--	JULY 10.........	3120	22.5	240
APR. 23.........	2410	3	220	JULY 23.........	3410	24	250
APR. 28.........	951	5	180	AUG. 12.........	2780	23.5	270
MAY 07.........	2520	9	145	SEPT. 19.........	2380	20.5	285
MAY 12.........	2800	14.5	175				

05212700 PRAIRIE RIVER NEAR TACONITE, MINN.

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
OCT. 23, 1974...	92	8.5	145	APR. 28.........	2210	2.5	120
DEC. 09.........	92	1.0	--	MAY 02.........	2410	2.5	65
JAN. 21, 1975...	88	--	153	MAY 30.........	485	17.5	110
MAR. 05.........	88	0	205	JULY 07.........	1140	24	100
APR. 08.........	130	1	--	AUG. 18.........	40	22.5	125

05216860 SWAN RIVER NEAR CALUMET, MINN.

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
OCT. 24, 1974...	33	7	215	APR. 28.........	500	2	195
DEC. 09.........	37	2	225	MAY 02.........	584	3	195
JAN. 20, 1975...	51	.5	230	MAY 27.........	132	16	205
MAR. 05.........	35	1.5	260	JULY 16.........	159	24	180
APR. 07.........	44	1	255	AUG. 15.........	29	21.5	205

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
05220500 MISSISSIPPI RIVER BELOW SANDY RIVER NEAR LIBBY, MINN.							
NOV. 07, 1974...	2970	4.5	230	APR. 28.........	7250	3.5	90
DEC. 17.........	2260	.5	--	MAY 05.........	8600	7	310
JAN. 23, 1975...	2120	.5	560	MAY 28.........	6390	19	220
MAR. 04.........	2280	2	150	JULY 15.........	5700	21	175
APR. 09.........	2970	.5	270	AUG. 21.........	2640	20	230
APR. 16.........	2790	5	290	SEPT. 29.........	3040	13	245
05227500 MISSISSIPPI RIVER AT AITKIN, MINN.							
NOV. 06, 1974...	3120	4.5	210	MAY 01.........	7730	3.5	100
DEC. 27.........	1950	0	285	MAY 08.........	6710	9.5	115
JAN. 22, 1975...	1880	.5	350	MAY 13.........	6000	14.5	140
MAR. 03.........	1890	0	320	MAY 20.........	5140	17	155
APR. 10.........	2110	0	320	MAY 29.........	5050	19.5	200
APR. 22.........	5540	3.5	180	JULY 14.........	5030	20	180
APR. 28.........	7330	4.5	95	SEPT. 30.........	2750	8	290
05244000 CROW WING RIVER AT NIMROD, MINN.							
NOV. 12, 1974...	596	1.5	325	APR. 25.........	1990	8	250
DEC. 09.........	399	0	360	JUNE 09.........	620	16	300
JAN. 30, 1975...	331	0	260	JULY 25.........	460	23.5	320
MAR. 17.........	372	0	--	AUG. 29.........	312	18	300
APR. 21.........	1500	3.5	280				
05245100 LONG PRAIRIE RIVER AT LONG PRAIRIE, MINN.							
OCT. 15, 1974...	28	7	510	APR. 21.........	1130	1.5	320
NOV. 15.........	35	0	480	APR. 30.........	786	6	400
DEC. 23.........	25	0	540	MAY 27.........	216	17	440
JAN. 28, 1975...	5.4	0	630	JUNE 23.........	478	24	340
FEB. 28.........	31	0	480	JULY 08.........	485	24	410
APR. 01.........	38	0	500	JULY 31.........	120	26.5	470
APR. 06.........	187	1	360	AUG. 21.........	81	20	480
APR. 18.........	641	2	240	SEPT. 17.........	76	15.5	380
05247500 CROW WING RIVER NEAR PILLAGER, MINN.							
OCT. 08, 1974...	754	8.5	260	MAR. 03.........	854	1.5	--
NOV. 12.........	1170	4	300	APR. 02.........	952	0	--
DEC. 17.........	771	.5	218	AUG. 28.........	944	20	330
JAN. 23, 1975...	852	0	310				

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
05270500 SAUK RIVER NEAR ST. CLOUD, MINN.							
OCT. 07, 1974...	80	5.5	345	APR. 21.........	1520	2.5	310
NOV. 11.........	148	5.5	430	APR. 28.........	3140	6	320
DEC. 16.........	94	0	340	JUNE 12.........	487	16.5	450
JAN. 21, 1975...	75	0	--	JULY 16.........	516	21	390
MAR. 03.........	120	0	--	AUG. 26.........	284	19	390
APR. 01.........	166	0	--	SEPT. 30.........	152	12	460
APR. 16.........	396	2	--				
05275000 ELK RIVER NEAR BIG LAKE, MINN.							
OCT. 07, 1974...	107	6.5	290	APR. 28.........	1990	7.5	185
NOV. 11.........	194	6.5	340	MAY 08.........	1220	13	240
DEC. 16.........	119	0	320	JUNE 10.........	241	19	340
JAN. 21, 1975...	90	0	220	JULY 14.........	303	22	360
FEB. 28.........	105	0	--	AUG. 26.........	174	20	295
MAR. 31.........	188	0	--	SEPT. 08.........	143	17.5	330
APR. 16.........	426	4	280	SEPT. 29.........	117	15	190
05278000 MIDDLE FORK CROW RIVER NEAR SPICER, MINN.							
OCT. 03, 1974...	1.1	7	460	MAY 01.........	232	5.5	360
NOV. 15.........	1.2	2	490	MAY 06.........	240	12	360
DEC. 23.........	1.6	.5	590	MAY 27.........	265	19.5	375
FEB. 20, 1975...	8.5	0	290	JUNE 23.........	175	23.5	310
MAR. 18.........	18	.5	460	JULY 31.........	44	27	290
APR. 16.........	75	1	390	AUG. 25.........	21	22.5	310
APR. 23.........	131	4	270	SEPT. 23.........	12	14	310
05278930 BUFFALO CREEK NEAR GLENCOE, MINN.							
OCT. 10, 1974...	.97	13.5	--	APR. 30.........	2100	8	675
NOV. 14.........	11	.5	--	MAY 15.........	154	15.5	800
DEC. 17.........	3.7	1	--	JUNE 12.........	74	17	725
JAN. 21, 1975...	13	0	--	AUG. 21.........	13	24	1400
FEB. 27.........	9.5	.5	--				
05279000 SOUTH FORK CROW RIVER NEAR MAYER, MINN.							
OCT. 11, 1974...	19	13.5	--	APR. 19.........	872	0	465
NOV. 14.........	13	1	950	APR. 23.........	2140	7	465
NOV. 19.........	24	1	1275	MAY 05.........	3020	20	650
DEC. 18.........	8.3	0	1400	JUNE 11.........	221	18	--
JAN. 20, 1975...	5.1	0	1310	JULY 17.........	194	26	775
FEB. 14.........	10	0	1410	SEPT. 24.........	10	17	940
MAR. 26.........	74	0	756				

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
05280000 CROW RIVER AT ROCKFORD, MINN.							
OCT. 28, 1974...	64	16.5	705	MAR. 26.........	188	0	--
NOV. 26.........	68	.5	--	APR. 16.........	977	0	505
DEC. 17.........	70	0	775	APR. 28.........	5580	8	470
DEC. 26.........	73	0	630	MAY 05.........	7720	13	540
JAN. 14, 1975...	41	0	600	MAY 15.........	3900	16	--
JAN. 30.........	57	0	--	JUNE 25.........	2280	20	400
FEB. 11.........	64	0	795	JULY 01.........	4240	24	440
FEB. 26.........	72	0	600	AUG. 26.........	138	20	595
MAR. 13.........	81	0	720	SEPT. 26.........	143	12	--
05286000 RUM RIVER NEAR ST. FRANCIS, MINN.							
OCT. 11, 1974...	295	12	295	MAY 01.........	6770	8	135
NOV. 11.........	455	5.5	315	MAY 08.........	4560	13	185
DEC. 23.........	256	0	350	JUNE 10.........	738	18	265
MAR. 18, 1975...	313	0	--	JULY 14.........	2020	19.5	260
APR. 20.........	2540	2.5	180	AUG. 25.........	812	21	240
APR. 21.........	3420	3	--	SEPT. 29.........	473	13	275
05288500 MISSISSIPPI RIVER AT ANOKA, MINN.							
OCT. 15, 1974...	3570	10.5	240	MAY 19.........	26600	18.5	200
NOV. 11.........	7780	7	320	JUNE 09.........	11600	18.5	220
DEC. 16.........	5180	3	--	JULY 14.........	20000	22	190
APR. 04, 1975...	6610	4	230	AUG. 20.........	6410	21	--
APR. 23.........	46100	5.5	250	SEPT. 22.........	5920	17.5	300
05290000 LITTLE MINNESOTA RIVER NEAR PEEVER, S. DAK.							
OCT. 03, 1974...	.26	8	1400	APR. 17.........	75	0	1000
NOV. 07.........	.49	5.5	1050	APR. 21.........	162	1	740
DEC. 12.........	.61	0	1500	APR. 28.........	291	7	610
JAN. 22, 1975...	.49	0	--	MAY 30.........	7.6	19	--
MAR. 04.........	.73	0	1500	JUNE 27.........	92	26	720
MAR. 20.........	2.9	0	850	AUG. 05.........	.36	27.5	960
APR. 14.........	12	0	1160	SEPT. 16.........	.19	21	1200

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
05291000 WHETSTONE RIVER NEAR BIG STONE CITY, S. DAK.							
OCT. 04, 1974...	1.8	11	1380	APR. 16.........	151	0	800
OCT. 22.........	2.7	9.5	1120	APR. 21.........	454	2	440
OCT. 29.........	3.5	11.5	1150	APR. 25.........	352	5.5	660
NOV. 11.........	4.4	2.5	1180	MAY 06.........	93	14.5	900
DEC. 02.........	4.1	0	1380	JUNE 03.........	9.8	18	1080
DEC. 23.........	4.3	0	--	JUNE 30.........	8.4	30	900
JAN. 20, 1975...	.79	0	1050	JULY 29.........	1.2	31	1100
FEB. 26.........	5.6	0	--	AUG. 14.........	1.5	21.5	910
MAR. 19.........	21	0	630	SEPT. 09.........	2.6	18.5	900
MAR. 20.........	69	0	680	SEPT. 22.........	1.8	13.5	1050
APR. 02.........	13	0	1120				
05292000 MINNESOTA RIVER AT ORTONVILLE, MINN.							
OCT. 01, 1974...	1.9	9	1600	MAY 06.........	312	14	1000
OCT. 30.........	1.9	14	1120	MAY 13.........	377	16.5	1100
DEC. 02.........	5.0	1	1500	MAY 29.........	25	21	1150
JAN. 08, 1975	4.0	.5	1400	JUNE 30.........	30	27.5	1010
APR. 02.........	5.2	2	1400	JULY 29.........	5.2	29	1100
APR. 16.........	5.6	3	1030	AUG. 04.........	4.6	27.5	1000
APR. 25.........	343	6	600	SEPT. 04.........	2.6	20	925
APR. 28.........	475	8	780	SEPT. 22.........	1.8	15.5	1100
05293000 YELLOW BANK RIVER NEAR ODESSA, MINN.							
OCT. 01, 1974...	.46	10	1100	APR. 21.........	479	.5	460
OCT. 30.........	1.7	12	950	APR. 29.........	301	8	650
DEC. 02.........	2.8	.5	1220	MAY 06.........	118	14	760
JAN. 08, 1975...	2.8	0	1080	JUNE 03.........	15	17.5	900
JAN. 20.........	2.6	0	--	JUNE 25.........	16	22.5	900
FEB. 26.........	2.9	0	--	JULY 29.........	1.2	26	1000
MAR. 17.........	5.0	0	740	AUG. 29.........	.86	20	775
MAR. 20.........	38	0	--	SEPT. 09.........	.39	17.5	875
APR. 16.........	85	.5	630				
05294000 POMME DE TERRE RIVER AT APPLETON, MINN.							
OCT. 01, 1974...	17	9	890	APR. 16.........	554	0	370
NOV. 01.........	27	12	875	APR. 17.........	892	0	400
DEC. 02.........	30	.5	980	APR. 30.........	733	7.5	650
JAN. 08, 1975...	21	0	800	MAY 23.........	294	21	710
JAN. 22.........	1.3	0	--	JUNE 25.........	637	25.5	625
FEB. 07.........	1.2	.5	820	JULY 28.........	140	26	710
APR. 01.........	32	0	900	SEPT. 02.........	83	20	825

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

05300000 LAC QUI PARLE RIVER NEAR LAC QUI PARLE, MINN.

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
OCT. 30, 1974	3.2	13	1400
DEC. 02	2.9	0	1400
JAN. 15, 1975	2.1	0	--
FEB. 07	4.0	0	990
MAR. 07	4.1	0	1300
APR. 01	26	0	990
APR. 10	18	0	980
APR. 22	600	1.5	650
APR. 30	520	8.5	850
MAY 09	167	16.5	1000
JUNE 03	31	21.5	1350
JULY 30	.48	29.5	1400
AUG. 05	2.5	25.5	1100
AUG. 22	1.0	22	1400
SEPT. 05	.95	19.5	1300
SEPT. 23	.91	13	850

05301000 MINNESOTA RIVER NEAR LAC QUI PARLE, MINN.

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
OCT. 03, 1974	11	11	700
OCT. 30	9.0	12.5	720
NOV. 29	93	.5	820
DEC. 03	448	0	325
DEC. 10	21	.5	520
JAN. 15, 1975	94	1	730
FEB. 03	159	2	990
FEB. 13	221	1	950
FEB. 27	135	1	1100
MAR. 31	202	1	850
APR. 15	197	3	1000
APR. 19	796	5	650
APR. 29	1600	6.5	730
JUNE 17	1090	20.5	710
JULY 16	440	25	700
AUG. 05	196	26	625
SEPT. 05	63	20	700

05304500 CHIPPEWA RIVER NEAR MILAN, MINN.

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
OCT. 30, 1974	35	13	580
NOV. 22	39	1	570
DEC. 02	47	0	750
JAN. 10, 1975	30	0	600
JAN. 16	8.2	0	--
FEB. 12	10	0	--
MAR. 12	15	0	800
APR. 04	48	0	625
APR. 15	981	1	550
APR. 18	1660	0	440
APR. 21	1740	2.5	500
APR. 29	2780	8	500
APR. 30	2620	7	560
JUNE 03	621	18.5	480
JULY 08	844	26.5	540
AUG. 07	210	24.5	580
SEPT. 10	165	20	--

05311000 MINNESOTA RIVER AT MONTEVIDEO, MINN.

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
OCT. 11, 1974	30	12.5	810
OCT. 31	33	12.5	980
NOV. 14	31	0	700
DEC. 03	454	0	900
DEC. 11	50	0	--
DEC. 20	38	0	800
JAN. 16, 1975	105	0	--
JAN. 22	143	0	1000
FEB. 03	171	0	825
FEB. 13	234	0	700
FEB. 27	152	0	1080
MAR. 13	50	0	1100
MAR. 31	230	0	1040
APR. 10	226	0	--
APR. 19	1010	1	780
APR. 22	1840	2.5	660
APR. 25	2690	4	700
JULY 01	1630	27.5	775
JULY 15	966	26.5	710
JULY 30	428	28.5	740
AUG. 15	141	22.5	680
SEPT. 19	148	14	650

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
05311400 SOUTH BRANCH YELLOW MEDICINE RIVER NEAR MINNEOTA, MINN.							
NOV. 26, 1974...	.21	1	1250	APR. 17.........	88	0	700
DEC. 12.........	.08	0	--	APR. 22.........	81	2	925
MAR. 21, 1975...	19	0	1100	APR. 29.........	72	8.5	1180
APR. 14.........	38	0	1050	JUNE 25.........	17	26	800
05313500 YELLOW MEDICINE RIVER NEAR GRANITE FALLS, MINN.							
OCT. 22, 1974...	2.3	10.5	1320	APR. 19.........	433	1	850
NOV. 25.........	2.8	.5	1010	APR. 22.........	377	2.5	775
DEC. 12.........	2.9	0	1110	APR. 29.........	401	8.5	1050
JAN. 17, 1975...	3.9	0	1050	MAY 09.........	123	14	1200
FEB. 14.........	3.1	0	900	MAY 28.........	42	19.5	950
MAR. 14.........	3.6	0	1150	JUNE 26.........	47	25	1100
APR. 03.........	3.4	0	1050	JULY 29.........	1.8	29	975
APR. 15.........	13	0	800	SEPT. 04.........	2.3	21.5	1000
05315000 REDWOOD RIVER AT MARSHALL, MINN.							
OCT. 22, 1974...	2.3	9	1080	MAR. 19.........	12	0	1250
NOV. 26..	4.1	.5	1550	APR. 03.........	9.2	0	1550
DEC. 12.........	4.4	.5	2000	APR. 14.........	74	0	990
JAN. 16, 1975...	1.7	0	1600	APR. 17.........	131	4	790
FEB. 04.........	4.1	0	1500	APR. 22.........	139	6	775
FEB. 14.........	5.2	0	1350	APR. 29.........	108	9	950
MAR. 14.........	5.8	0	1150	JUNE 25.........	7.8	23.5	1190
05316500 REDWOOD RIVER NEAR REDWOOD FALLS, MINN.							
OCT. 22, 1974...	2.7	10	950	APR. 14.........	141	1	760
NOV. 25.........	7.2	0	1100	APR. 17.........	369	0	790
DEC. 12.........	18	0	--	APR. 28.........	519	8.5	925
JAN. 17, 1975...	1.1	0	1550	MAY 09.........	160	13	1150
FEB. 14.........	2.2	0	1050	MAY 28.........	51	18.5	1000
MAR. 07.........	3.3	0	820	JUNE 24.........	100	23.5	1350
APR. 10.........	10.4	0	650	JULY 29.........	2.9	30.5	800
05316770 MINNESOTA RIVER AT NEW ULM, MINN.							
NOV. 01, 1974...	95	14	975	APR. 30.........	8010	7.5	725
DEC. 02.........	89	1.5	--	MAY 29.........	2680	19	640
JAN. 06, 1975...	83	.5	760	JULY 10.........	1960	27	750
FEB. 12.........	250	0	--	AUG. 07.........	381	26.5	650
MAR. 21.........	183	.5	--	SEPT. 11.........	244	20	775
APR. 21.........	3240	6.5	675				

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

05317000 COTTONWOOD RIVER NEAR NEW ULM, MINN.

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
NOV. 01, 1974...	22	12	850	APR. 30.........	1560	8.5	950
DEC. 02.........	17	.5	--	MAY 30.........	182	19	1000
JAN. 07, 1975...	16	.5	610	JULY 03.........	154	26	825
FEB. 13.........	12	0	--	AUG. 07.........	21	26.5	700
APR. 22.........	1180	5.5	850	SEPT. 11.........	26	21.5	--

05317200 LITTLE COTTONWOOD RIVER NEAR COURTLAND, MINN.

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
NOV. 01, 1974...	3.1	14	--	APR. 23.........	259	7	--
DEC. 03.........	2.2	1.5	--	MAY 30.........	24	20.5	--
JAN. 07, 1975...	2.0	3	840	JULY 02.........	50	24	750
FEB. 13.........	1.3	2	--	SEPT. 12.........	1.5	7	1120

05320000 BLUE EARTH RIVER NEAR RAPIDAN, MINN.

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
OCT. 31, 1974...	83	17.5	625	MAR. 20.........	99	2	--
DEC. 04.........	72	1	--	JULY 09.........	1080	24	630
JAN. 09, 1975...	60	1	990	AUG. 05.........	154	26	490
FEB. 18.........	62	.5	--	SEPT. 10.........	63	20	--

05320500 LE SUEUR RIVER NEAR RAPIDAN, MINN.

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
OCT. 30, 1974...	37	14	--	MAY 01.........	4990	8	--
DEC. 04.........	40	.5	--	MAY 28.........	701	20	--
JAN. 09, 1975...	22	.5	890	JULY 10.........	1530	22	455
FEB. 14.........	23	0	--	AUG. 06.........	73	23.5	550
MAR. 19.........	53	1.5	650	SEPT. 09.........	24	19	650

05325000 MINNESOTA RIVER AT MANKATO, MINN.

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
OCT. 31, 1974...	269	14	850	MAY 13.........	8150	16.5	625
DEC. 03.........	231	1	--	MAY 28.........	5300	19.5	590
FEB. 14, 1975...	336	0	--	JUNE 03.........	5780	16	720
MAR. 20.........	400	1.5	875	JULY 09.........	4920	26.5	710
APR. 16.........	10500	.5	--	AUG. 05.........	795	26	500
MAY 02.........	22800	9.5	600	SEPT. 10.........	291	19	850

05327000 HIGH ISLAND CREEK NEAR HENDERSON, MINN.

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
OCT. 11, 1974...	2.4	14	--	MAY 09.........	324	10.5	--
NOV. 13.........	2.3	2.5	875	JUNE 12.........	63	14.5	650
DEC. 18.........	1.8	.5	--	JUNE 30.........	391	26.5	690
JAN. 22, 1975...	1.1	0	--	AUG. 16.........	2.4	22	--
FEB. 27.........	2.8	1	--	SEPT. 25.........	1.6	12.5	--
MAY 08.........	336	12	700				

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
05330000 MINNESOTA RIVER NEAR JORDAN, MINN.							
OCT. 29, 1974...	355	13	835	MAR. 28.........	1610	.5	--
DEC. 16.........	522	0	--	APR. 10.........	4590	2	470
DEC. 27.........	367	0	970	APR. 15.........	9830	1.5	--
JAN. 30, 1975...	310	.5	850	MAY 22.........	6600	22	--
FEB. 12.........	399	1	--	JULY 29.........	1430	265	--
FEB. 27.........	485	.5	950	AUG. 27.........	595	23	800
MAR. 12.........	411	.5	--	SEPT. 25.........	471	13.5	790
05336700 KETTLE RIVER BELOW SANDSTONE, MINN.							
OCT. 09, 1974...	164	8	180	APR. 21.........	8660	1	70
NOV. 13.........	448	3.5	107	APR. 30.........	7100	4	65
DEC. 18.........	165	.5	180	MAY 13.........	1010	14.5	110
JAN. 23, 1975...	188	0	365	JUNE 16.........	1580	15	90
FEB. 27.........	172	0	--	JULY 11.........	1050	20	125
APR. 02.........	268	0	--	AUG. 23.........	138	19	200
APR. 20.........	7900	1	60				
05338500 SNAKE RIVER NEAR PINE CITY, MINN.							
OCT. 09, 1974...	123	12.5	210	APR. 22.........	6200	3.5	105
NOV. 13.........	298	.5	223	MAY 12.........	1650	15.5	158
DEC. 18.........	146	.5	235	JUNE 17.........	981	18	170
JAN. 24, 1975...	153	.5	300	JULY 11.........	4130	23	140
FEB. 27.........	154	0	--	AUG. 22.........	100	21	220
APR. 03.........	224	2.5	--				
05340050 SUNRISE RIVER NEAR LINDSTROM, MINN.							
OCT. 10, 1974...	24	9.5	265	APR. 21.........	277	3.5	198
NOV. 14.........	38	2.5	295	APR. 29.........	622	7	165
DEC. 19.........	56	0	320	MAY 12.........	442	17	240
JAN. 27, 1975...	40	0	390	JUNE 17.........	302	19	230
FEB. 26.........	72	0	--	JULY 11.........	562	21	220
APR. 04.........	38	1.5	--	AUG. 22.........	47	20	320
APR. 20.........	256	4.5	180				
05344500 MISSISSIPPI RIVER AT PRESCOTT, WIS.							
APR. 24, 1975...	88100	4.5	--	AUG. 21.........	11800	23	380
MAY 21.........	41700	17	125	SEPT. 23.........	11900	16	340

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
05345000 VERMILLION RIVER NEAR EMPIRE CITY, MINN.							
OCT. 08, 1974...	19	13	590	APR. 30.........	350	8.5	420
NOV. 12.........	24	4.5	680	JUNE 10.........	54	12	600
MAR. 17, 1975...	18	.5	640	JUNE 12.........	221	14.5	380
APR. 14.........	177	2	385	JULY 16.........	51	25.5	490
APR. 22.........	113	7.5	--	AUG. 19.........	36	22	--
APR. 28.........	1060	7	--	SEPT. 23.........	36	10.5	650
05353800 STRAIGHT RIVER NEAR FARIBAULT, MINN.							
OCT. 29, 1974...	43	13	650	MAY 20.........	303	10.5	--
DEC. 05.........	35	.5	--	JULY 07.........	243	24	600
FEB. 20, 1975...	29	.5	--	AUG. 04.........	49	26	600
MAR. 17.........	34	.5	700	SEPT. 08.........	30	18	750
MAY 05.........	1290	9.5	--				
05373000 SOUTH FORK ZUMBRO RIVER NEAR ROCHESTER, MINN.							
OCT. 21, 1974...	87	13	725	APR. 30.........	744	9.5	465
NOV. 25.........	90	8	740	MAY 19.........	222	22	640
JAN. 06, 1975...	70	8	875	JULY 07.........	202	26	805
FEB. 10.........	59	5	795	AUG. 11.........	84	23	700
MAR. 17.........	102	11.5	865	SEPT. 08.........	66	22.5	805
APR. 18.........	642	7.5	420				
05374000 ZUMBRO RIVER AT ZUMBRO FALLS, MINN.							
OCT. 21, 1974...	177	8	535	APR. 29.........	7840	10	430
NOV. 25.........	162	2	530	MAY 19.........	911	17	530
JAN. 06, 1975...	362	2.5	590	JULY 21.........	742	26	540
FEB. 10.........	369	0	605	AUG. 11.........	209	19	530
MAR. 31.........	803	1.5	450	SEPT. 15.........	162	14	540
APR. 24.........	2840	7.5	445				
05376000 NORTH FORK WHITEWATER RIVER NEAR ELBA, MINN.							
OCT. 24, 1974...	40	9	515	JUNE 03.........	43	15	535
DEC. 02.........	39	3	465	JULY 05.........	1630	22.5	145
JAN. 09, 1975...	38	3	530	JULY 06.........	435	22	270
FEB. 21.........	33	2	490	JULY 16.........	57	8.5	540
APR. 01.........	38	2.5	--	AUG. 07.........	43	17.5	500
APR. 28.........	425	7	--	SEPT. 05.........	40	15	525
APR. 29.........	140	10	440				

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
05378300 STRAIGHT VALLEY CREEK NEAR ROLLINGSTONE, MINN.							
OCT. 24, 1974...	1.7	8	535	APR. 30.........	3.9	9.5	545
DEC. 02..........	1.8	4.5	505	MAY 23.........	2.0	13.5	545
JAN. 09, 1975...	1.7	4.5	560	JULY 15.........	1.8	15	540
FEB. 20..........	1.7	2.5	510	AUG. 07.........	1.6	17	520
MAR. 21..........	3.2	4	485	SEPT. 16.........	1.8	12	525
APR. 14..........	2.3	8	525				
05378500 MISSISSIPPI RIVER AT WINONA, MINN.							
NOV. 07, 1974...	24000	8.5	--	MAY 06.........	150000	12	--
APR. 25, 1975...	115000	8	362	JULY 07.........	48100	26	325
05384000 ROOT RIVER NEAR LANESBORO, MINN.							
OCT. 22, 1974...	205	9	470	APR. 17.........	1250	6.5	400
NOV. 26..........	176	.5	480	MAY 21.........	419	20	500
JAN. 07, 1975...	189	0	535	JULY 03.........	457	24.5	540
FEB. 19..........	168	0	485	AUG. 12.........	186	22	395
MAR. 19..........	184	4.5	480	SEPT. 10.........	181	17	475
05384500 RUSH CREEK NEAR RUSHFORD, MINN.							
OCT. 22, 1974...	64	10	450	APR. 15.........	81	9.5	450
DEC. 26..........	63	3	460	MAY 22.........	63	14.5	477
JAN. 08, 1975...	62	2.5	490	JULY 02.........	70	18.5	480
FEB. 12..........	56	0	320	AUG. 12.........	62	21	445
MAR. 19..........	66	8	475	SEPT. 12.........	57	11	465
05385000 ROOT RIVER NEAR HOUSTON, MINN.							
OCT. 23, 1974...	525	9.5	490	APR. 16.........	2070	7	395
NOV. 27..........	513	1.5	490	MAY 21.........	1000	21	500
JAN. 07, 1975...	510	0	530	JULY 01.........	1170	24	380
FEB. 19..........	442	0	480	AUG. 13.........	520	22	410
MAR. 20..........	548	6.5	490	SEPT. 11.........	466	18	495
05385500 SOUTH FORK ROOT RIVER NEAR HOUSTON, MINN.							
OCT. 23, 1974...	155	10	500	APR. 15.........	278	7	440
NOV. 27..........	151	3	490	MAY 22.........	164	18.5	500
JAN. 07, 1975...	140	1.5	555	JULY 02.........	162	20	520
FEB. 11..........	149	0	490	AUG. 13.........	147	20.5	480
MAR. 20..........	150	5	480	SEPT. 11.........	127	16.5	500

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	DISCHARGE (CFS)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
05457000 CEDAR RIVER NEAR AUSTIN, MINN.							
OCT. 29, 1974...	82	14.5	550	MAY 06.........	615	14	500
DEC. 05.........	66	3.5	--	MAY 20.......	254	23.5	550
JAN. 10, 1975...	63	3	650	JULY 08.........	228	24.5	580
FEB. 19.........	58	1.5	850	AUG. 04.........	76	26	650
MAR. 18.........	75	1.5	850	SEPT. 08.........	70	23.5	800
APR. 24.........	1550	9	450				
05476000 DES MOINES RIVER AT JACKSON, MINN.							
OCT. 01, 1974...	3.1	9.5	700	APR. 11.........	262	.5	525
OCT. 31.........	15	12.5	910	APR. 14.........	670	0	650
NOV. 27.........	13	1.5	1000	APR. 18.........	1090	4.5	650
DEC. 30.........	7.0	1	1050	MAY 23.........	375	20.5	850
FEB. 05, 1975...	2.6	0	875	JUNE 24.........	710	23	760
MAR. 11.........	4.9	0	1100	AUG. 04.........	105	27	800
MAR. 21.........	116	0	500	SEPT. 08.........	16	21.5	900

DATE	TIME	DEPTH OF RESERVOIR (FT) (72025)	DEPTH (FT) (00003)	AIR TEMPERATURE (DEG C) (00020)	TEMPERATURE (DEG C) (00010)	DISSOLVED OXYGEN (MG/L) (00300)	PERCENT SATURATION (00301)	PH (UNITS) (00400)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)
444500093150000 - ALIMAGNET LAKE AT APPLE VALLEY, MINN (LAT 44 45 00 LONG 093 15 00)									
NOV., 1974									
04...	1000	10	1.0	.0	8.5	10.0	87	7.6	215
04...	1001	--	10	--	8.5	9.7	85	--	--
JUNE, 1975									
24...	1300	--	--	33.0	26.0	8.1	101	8.1	180
444912093110000 - BLACKHAWK LAKE AT EAGAN VILLAGE, MINN (LAT 44 49 12 LONG 093 11 00)									
OCT., 1974									
18...	1300	1.5	--	--	--	--	--	--	--
21...	1030	2.0	1.0	14.0	7.5	11.0	94	8.7	230
21...	1100	--	--	--	--	--	--	--	--
JUNE, 1975									
05...	1030	--	--	22.0	21.0	2.4	28	7.6	300
444733093120900 - BOESEL POND AT EAGAN VILLAGE, MINN (LAT 44 47 33 LONG 093 12 09)									
OCT., 1974									
30...	1230	5.5	1.0	15.5	13.0	10.5	102	8.5	145
30...	1231	--	5.5	--	12.0	8.5	74	--	--
JUNE, 1975									
13...	1015	--	--	24.0	19.0	7.5	82	6.9	101
445026093065100 - BURVIEW PARK POND AT EAGAN VILLAGE, MINN (LAT 44 50 26 LONG 093 06 51)									
OCT., 1974									
23...	1030	7.7	1.0	14.0	10.0	9.6	87	8.1	240
23...	1031	--	7.7	--	9.0	6.5	56	--	--
JUNE, 1975									
16...	1000	--	--	19.0	18.0	8.7	95	8.4	204
444821093124500 - CEDAR GROVE POND AT EAGAN VILLAGE, MINN (LAT 44 48 21 LONG 093 12 45)									
NOV., 1974									
04...	1200	6.0	1.0	.5	7.5	11.2	96	8.0	160
04...	1201	--	6.0	--	7.5	11.1	99	--	--
JUNE, 1975									
17...	1200	--	--	24.0	20.0	11.1	119	9.4	129
445035093074600 - DONALDSON'S POND AT EAGAN VILLAGE,MINN (LAT 44 50 35 LONG 093 07 46)									
OCT., 1974									
29...	1100	8.0	1.0	15.5	12.0	8.8	84	7.6	230
29...	1101	--	6.0	--	10.0	6.0	54	--	--
JUNE, 1975									
12...	1315	--	--	20.0	18.5	6.1	67	7.2	202
444500093095200 - FARQUAR LAKE AT APPLE VALLEY, MINN (LAT 44 45 00 LONG 093 09 52)									
OCT., 1974									
31...	1100	7.5	1.0	17.0	12.5	8.7	84	7.8	195
31...	1101	--	7.6	--	11.5	7.8	74	--	--
JUNE, 1975									
23...	1230	--	--	27.0	25.0	7.4	90	9.1	155

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DATE	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70301)	SUS-PENDED SOLIDS (MG/L) (70299)	TUR-BID-ITY (JTU) (00070)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L) (00625)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	TOTAL NITRO-GEN (N) (MG/L) (00600)
444500093150000 - ALIMAGNET LAKE AT APPLE VALLEY, MINN (LAT 44 45 00 LONG 093 15 00)									
NOV., 1974									
04...	143	.19	5	4	12	1.2	.01	.01	1.2
04...	--	--	--	--	--	--	--	--	--
JUNE, 1975									
28...	109	.15	12	2	11	1.1	.06	.06	1.2
444912093110000 - BLACKHAWK LAKE AT EAGAN VILLAGE, MINN (LAT 44 49 12 LONG 093 11 00)									
OCT., 1974									
18...	--	--	--	--	--	--	--	--	--
21...	163	.22	32	8	2.8	5.9	.00	.00	5.9
21...	--	--	--	--	--	--	--	--	--
JUNE, 1975									
05...	173	.24	0	3	2.7	3.7	.02	.00	3.7
444733093120900 - BOESEL POND AT EAGAN VILLAGE, MINN (LAT 44 47 33 LONG 093 12 09)									
OCT., 1974									
30...	76	.10	14	10	4.8	4.3	.04	.02	4.3
30...	--	--	--	--	--	--	--	--	--
JUNE, 1975									
13...	80	.11	36	18	3.8	3.6	.00	.00	3.6
445026093065100 - BURVIEW PARK POND AT EAGAN VILLAGE, MINN (LAT 44 50 26 LONG 093 06 51)									
OCT., 1974									
23...	161	.22	17	5	11	3.0	.00	.00	3.0
23...	--	--	--	--	--	--	--	--	--
JUNE, 1975									
16...	131	.18	8	10	7.7	1.8	.00	.00	1.8
444821093124500 - CEDAR GROVE POND AT EAGAN VILLAGE, MINN (LAT 44 48 21 LONG 093 12 45)									
NOV., 1974									
04...	108	.15	3	4	12	2.7	.12	.12	2.8
04...	--	--	--	--	--	--	--	--	--
JUNE, 1975									
17...	79	.11	4	4	15	1.8	.09	.08	1.9
445035093074600 - DONALDSON'S POND AT EAGAN VILLAGE,MINN (LAT 44 50 35 LONG 093 07 46)									
OCT., 1974									
29...	139	.19	2	3	15	1.1	.06	.00	1.2
29...	--	--	--	--	--	--	--	--	--
JUNE, 1975									
12...	113	.15	0	4	20	.76	.11	.11	.87
444500093095200 - FARQUAR LAKE AT APPLE VALLEY, MINN (LAT 44 45 00 LONG 093 09 52)									
OCT., 1974									
31...	134	.18	28	20	12	4.0	.04	.00	4.0
31...	--	--	--	--	--	--	--	--	--
JUNE, 1975									
23...	119	.16	48	11	11	2.6	.11	.11	2.7

DATE	DIS-SOLVED ORTHO, PHOS-PHORUS (P) (MG/L) (00671)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)	TOTAL NITRO-GEN IN BOTTOM MATERI-AL (N) (MG/KG) (00603)	TOTAL PHOS-PHORUS IN BOT-TOM MA-TERIAL (MG/KG) (00668)	IN-ORGANIC CARBON IN BOT-TOM MA-TERIAL (G/KG) (00686)	ORGANIC CARBON IN BOT-TOM MA-TERIAL (C) (G/KG) (00687)	TOTAL NITRO-GEN (NO3) (MG/L) (71887)	DIS-SOLVED ORTHO PHOS-PHATE (PO4) (MG/L) (00660)
444500093150000 - ALIMAGNET LAKE AT APPLE VALLEY, MINN (LAT 44 45 00 LONG 093 15 00)									
NOV., 1974									
04...	.01	.06	11	700	69	<.1	--	5.4	.03
04...	--	--	--	--	--	--	--	--	--
JUNE, 1975									
24...	.00	.04	9.7	19600	280	--	154	5.1	.00
444912093110000 - BLACKHAWK LAKE AT EAGAN VILLAGE, MINN (LAT 44 49 12 LONG 093 11 00)									
OCT., 1974									
18...	--	--	--	--	--	--	--	--	--
21...	.01	.17	36	--	--	--	--	26	.03
21...	--	--	--	3400	184	13	--	--	--
JUNE, 1975									
05...	.03	.05	20	15000	57	--	67	16	.09
444733093120900 - BOEBEL POND AT EAGAN VILLAGE, MINN (LAT 44 47 33 LONG 093 12 09)									
OCT., 1974									
30...	.01	.12	19	1200	220	.1	--	19	.03
30...	--	--	--	--	--	--	--	--	--
JUNE, 1975									
13...	.01	.18	9.9	7300	57	--	35	16	.03
445026093065100 - BURVIEW PARK POND AT EAGAN VILLAGE, MINN (LAT 44 50 26 LONG 093 06 51)									
OCT., 1974									
23...	.01	.14	13	1600	300	<.1	--	13	.03
23...	--	--	--	--	--	--	--	--	--
JUNE, 1975									
16...	.00	.08	13	8000	47	--	40	8.0	.00
444821093124500 - CEDAR GROVE POND AT EAGAN VILLAGE, MINN (LAT 44 48 21 LONG 093 12 45)									
NOV., 1974									
04...	.01	.15	19	1200	60	.2	--	12	.03
04...	--	--	--	--	--	--	--	--	--
JUNE, 1975									
17...	.00	.10	10	4300	140	--	17	8.4	.00
445035093074600 - DONALDSON'S POND AT EAGAN VILLAGE,MINN (LAT 44 50 35 LONG 093 07 46)									
OCT., 1974									
29...	.00	.05	9.5	140	328	8.9	--	5.1	.00
29...	--	--	--	--	--	--	--	--	--
JUNE, 1975									
12...	.03	.06	5.1	830	120	--	5.0	3.9	.09
444500093095200 - FARQUAR LAKE AT APPLE VALLEY, MINN (LAT 44 45 00 LONG 093 09 52)									
OCT., 1974									
31...	.00	.13	22	1600	413	<.1	--	18	.00
31...	--	--	--	--	--	--	--	--	--
JUNE, 1975									
23...	.10	.10	18	9500	77	--	43	12	.31

DATE	TIME	DEPTH OF RESER- VOIR (FT) (72025)	DEPTH (FT) (00003)	AIR TEMPER- ATURE (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	DIS- SOLVED OXYGEN (MG/L) (00300)	PER- CENT SATUR- ATION (00301)	PH (UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)
444923093095800 - FISH LAKE AT EAGAN VILLAGE, MINN (LAT 44 49 23 LONG 093 09 58)									
OCT., 1974									
24...	1330	28	1.0	23.5	10.5	8.8	81	8.1	230
24...	1331	--	28	--	8.5	.5	4	--	--
JUNE, 1975									
20...	1000	--	1.0	28.0	23.0	9.8	117	8.7	239
20...	1005	--	5.0	--	22.0	11.2	130	--	--
20...	1010	--	10	--	21.0	9.8	113	--	--
20...	1015	--	15	--	16.0	7.2	74	--	--
20...	1020	--	20	--	11.0	.9	8	--	--
20...	1025	--	25	--	8.0	.4	3	--	--
20...	1030	--	30	--	7.0	.2	2	--	--
445123093071400 - HAUSER POND AT EAGAN VILLAGE, MINN (LAT 44 51 23 LONG 093 07 14)									
OCT., 1974									
22...	1000	1.0	.2	15.0	11.0	10.0	93	7.6	240
JUNE, 1975									
12...	1100	--	--	18.0	16.5	6.4	67	7.1	157
444717093083100 - HOLLAND LAKE AT EAGAN VILLAGE, MINN (LAT 44 47 17 LONG 093 08 31)									
OCT., 1974									
17...	1000	50	1.0	13.5	10.0	9.7	88	8.0	160
17...	1001	--	10	--	10.0	9.4	85	--	--
17...	1002	--	15	--	10.0	9.2	84	--	--
17...	1003	--	20	--	8.0	1.0	9	--	--
17...	1004	--	25	--	5.5	.7	6	--	--
17...	1005	--	30	--	5.5	.4	3	--	--
17...	1006	--	40	--	5.0	.3	2	--	--
17...	1007	--	50	--	5.0	.3	2	--	225
JUNE, 1975									
19...	1000	--	--	24.0	20.0	9.0	101	8.1	162
444640093094700 - JENSEN LAKE AT EAGAN VILLAGE, MINN (LAT 44 46 40 LONG 093 09 47)									
OCT., 1974									
17...	1300	5.0	1.0	14.5	10.0	8.6	78	7.8	200
JUNE, 1975									
20...	1230	--	--	30.0	25.0	10.6	129	7.3	150
444738093065200 - LAKESIDE ESTATE LAKE AT EAGAN VILLAGE, MINN (LAT 44 47 38 LONG 093 06 52)									
OCT., 1974									
23...	1300	3.8	1.0	16.5	11.0	12.2	113	9.1	195
JUNE, 1975									
18...	1300	--	--	17.0	20.0	8.4	94	8.0	159
444859093122700 - LANGHOVEN LAKE AT EAGAN VILLAGE, MINN (LAT 44 48 59 LONG 093 12 27)									
OCT., 1974									
30...	1015	1.5	1.0	15.5	13.5	5.6	55	7.6	285
JUNE, 1975									
17...	1000	--	--	24.0	19.0	11.6	127	9.2	253
445042093094300 - LEMAY LAKE AT EAGAN VILLAGE, MINN (LAT 44 50 42 LONG 093 09 43)									
OCT., 1974									
29...	1330	5.0	1.0	14.5	12.0	9.5	90	8.6	325
JUNE, 1975									
05...	1300	--	--	21.0	21.0	8.6	99	8.7	262

DATE	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303)	SUS- PENDED SOLIDS (MG/L) (70299)	TUR- BID- ITY (JTU) (00070)	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	TOTAL NITRO- GEN (N) (MG/L) (00600)
444923093095800 - FISH LAKE AT EAGAN VILLAGE, MINN (LAT 44 49 23 LONG 093 09 58)									
OCT., 1974									
24...	138	.19	1	1	8.0	1.0	.00	.00	1.0
24...	--	--	--	--	--	--	--	--	--
JUNE, 1975									
20...	137	.19	12	1	12	.74	.00	.00	.74
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
445123093071400 - HAUSER POND AT EAGAN VILLAGE, MINN (LAT 44 51 23 LONG 093 07 14)									
OCT., 1974									
22...	159	.22	11	1	5.1	1.9	.03	.00	1.9
JUNE, 1975									
12...	107	.15	24	2	1.4	1.7	.00	.00	1.7
444717093083100 - HOLLAND LAKE AT EAGAN VILLAGE, MINN (LAT 44 47 17 LONG 093 08 31)									
OCT., 1974									
17...	102	.14	17	1	5.3	.76	.01	.01	.77
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
JUNE, 1975									
19...	109	.15	0	1	4.5	.67	.00	.00	.67
444640093094700 - JENSEN LAKE AT EAGAN VILLAGE, MINN (LAT 44 46 40 LONG 093 09 47)									
OCT., 1974									
17...	138	.19	4	3	7.6	1.6	.00	.00	1.6
JUNE, 1975									
20...	96	.13	8	2	6.3	1.1	.00	.00	1.1
444738093065200 - LAKESIDE ESTATE LAKE AT EAGAN VILLAGE, MINN (LAT 44 47 38 LONG 093 06 52)									
OCT., 1974									
23...	125	.17	11	6	5.2	3.5	.01	.01	3.5
JUNE, 1975									
18...	97	.13	4	1	5.1	1.4	.00	.00	1.4
444859093122700 - LANGHOVEN LAKE AT EAGAN VILLAGE, MINN (LAT 44 48 59 LONG 093 12 27)									
OCT., 1974									
30...	147	.20	11	7	9.4	2.6	.03	.01	2.6
JUNE, 1975									
17...	159	.22	16	4	11	1.6	.19	.18	1.8
445042093094300 - LEMAY LAKE AT EAGAN VILLAGE, MINN (LAT 44 50 42 LONG 093 09 43)									
OCT., 1974									
29...	204	.28	6	4	24	2.0	.00	.00	2.0
JUNE, 1975									
05...	147	.20	0	3	22	1.6	.00	.00	1.6

DATE	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L) (00671)	TOTAL PHOSPHORUS (P) (MG/L) (00665)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)	TOTAL NITROGEN IN BOTTOM MATERIAL (N) (MG/KG) (00603)	TOTAL PHOSPHORUS IN BOTTOM MATERIAL (MG/KG) (00668)	INORGANIC CARBON IN BOTTOM MATERIAL (G/KG) (00686)	ORGANIC CARBON IN BOTTOM MATERIAL (C) (G/KG) (00687)	TOTAL NITROGEN (NO3) (MG/L) (71887)	DISSOLVED ORTHO PHOSPHATE (PO4) (MG/L) (00660)
444923093095800 - FISH LAKE AT EAGAN VILLAGE, MINN (LAT 44 49 23 LONG 093 09 58)									
OCT., 1974									
24...	.00	.01	9.0	80	158	2.6	--	4.4	.00
24...	--	--	--	--	--	--	--	--	--
JUNE, 1975									
20...	.00	.03	9.6	10500	250	--	44	3.3	.00
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
445123093071400 - HAUSER POND AT EAGAN VILLAGE, MINN (LAT 44 51 23 LONG 093 07 14)									
OCT., 1974									
22...	.01	.01	20	300	190	<.1	--	8.5	.03
JUNE, 1975									
12...	.03	.11	17	1400	21	--	8.0	7.5	.09
444717093083100 - HOLLAND LAKE AT EAGAN VILLAGE, MINN (LAT 44 47 17 LONG 093 08 31)									
OCT., 1974									
17...	.01	.01	--	4900	85	<.1	--	3.4	.03
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
JUNE, 1975									
19...	.00	.00	8.4	9600	55	--	33	3.0	.00
444640093094700 - JENSEN LAKE AT EAGAN VILLAGE, MINN (LAT 44 46 40 LONG 093 09 47)									
OCT., 1974									
17...	.01	.05	29	600	69	<.1	--	7.1	.03
JUNE, 1975									
20...	.00	.04	13	37200	43	--	181	4.9	.00
444738093065200 - LAKESIDE ESTATE LAKE AT EAGAN VILLAGE, MINN (LAT 44 47 38 LONG 093 06 52)									
OCT., 1974									
23...	.01	.19	14	1600	182	<.1	--	16	.03
JUNE, 1975									
18...	.00	.06	11	4400	140	--	15	6.2	.00
444859093122700 - LANGHOVEN LAKE AT EAGAN VILLAGE, MINN (LAT 44 48 59 LONG 093 12 27)									
OCT., 1974									
30...	.01	.28	21	170	360	5.5	--	12	.03
JUNE, 1975									
17...	.17	.28	14	4500	130	--	19	7.9	.52
445042093094300 - LEMAY LAKE AT EAGAN VILLAGE, MINN (LAT 44 50 42 LONG 093 09 43)									
OCT., 1974									
29...	.01	.10	21	50	279	5.4	--	8.9	.03
JUNE, 1975									
05...	.00	.03	2.2	16400	130	--	77	7.1	.00

DATE	TIME	DEPTH OF RESERVOIR (FT) (72025)	DEPTH (FT) (00003)	AIR TEMPERATURE (DEG C) (00020)	TEMPERATURE (DEG C) (00010)	DISSOLVED OXYGEN (MG/L) (00300)	PERCENT SATURATION (00301)	PH (UNITS) (00400)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)
444522093102600 - LONG LAKE AT APPLE VALLEY, MINN (LAT 44 45 22 LONG 093 10 26)									
OCT., 1974									
31...	1000	4.0	1.0	17.0	12.5	8.5	82	8.5	210
JUNE, 1975									
23...	1100	--	--	27.0	24.5	5.2	63	7.9	206
444843093090500 - MCCARTHY LAKE AT EAGAN VILLAGE, MINN (LAT 44 48 43 LONG 093 09 05)									
OCT., 1974									
18...	1300	1.5	1.0	13.0	11.0	7.8	72	7.9	285
JUNE, 1975									
13...	1130	--	--	24.0	19.5	15.4	171	8.7	230
445115093062100 - SHANAHAN POND AT EAGAN VILLAGE, MINN (LAT 44 51 15 LONG 093 06 21)									
OCT., 1974									
22...	1300	6.5	1.0	16.0	10.0	10.6	96	7.9	135
JUNE, 1975									
16...	1300	--	--	19.0	19.0	11.0	121	7.9	99
444652093131000 - SLATER'S ACRES POND AT EAGAN VILLAGE, MINN (LAT 44 46 52 LONG 093 13 10)									
OCT., 1974									
21...	1300	1.5	1.0	15.5	8.0	13.0	112	9.5	105
JUNE, 1975									
18...	1030	--	--	18.0	20.0	5.2	58	7.0	117
444735093100900 - THOMAS LAKE AT EAGAN VILLAGE, MINN (LAT 44 47 35 LONG 093 10 09)									
OCT., 1974									
18...	0930	5.5	1.0	7.0	10.0	9.9	90	8.1	230
JUNE, 1975									
04...	1000	--	--	22.0	20.5	7.2	82	7.6	178
444745093095700 - WILDERNESS LAKE AT EAGAN VILLAGE, MINN (LAT 44 47 45 LONG 093 09 57)									
OCT., 1974									
24...	1100	4.9	1.0	15.5	10.5	9.4	86	7.5	155
JUNE, 1975									
04...	1200	--	--	22.0	21.0	5.7	68	7.3	157

DATE	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L) (70300)	DISSOLVED SOLIDS (TONS PER AC-FT) (70303)	SUSPENDED SOLIDS (MG/L) (70299)	TURBIDITY (JTU) (00070)	DISSOLVED CHLORIDE (CL) (MG/L) (00940)	TOTAL KJELDAHL NITROGEN (N) (MG/L) (00625)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	TOTAL NITROGEN (N) (MG/L) (00600)
444522093102600 - LONG LAKE AT APPLE VALLEY, MINN (LAT 44 45 22 LONG 093 10 26)									
OCT., 1974									
31...	139	,19	13	9	17	4,0	,01	,00	4,0
JUNE, 1975									
23...	123	,17	44	22	9,7	2,9	,16	,16	3,1
444843093090500 - MCCARTHY LAKE AT EAGAN VILLAGE, MINN (LAT 44 48 43 LONG 093 09 05)									
OCT., 1974									
18...	174	,24	17	2	6,9	1,5	,02	,01	1,5
JUNE, 1975									
13...	148	,20	16	1	2,3	,78	,00	,00	,78
445115093062100 - SHANAHAN POND AT EAGAN VILLAGE, MINN (LAT 44 51 15 LONG 093 06 21)									
OCT., 1974									
22...	120	,16	13	4	4,7	3,1	,05	,00	3,2
JUNE, 1975									
16...	83	,11	16	2	3,3	1,6	,00	,00	1,6
444652093131000 - SLATER'S ACRES POND AT EAGAN VILLAGE, MINN (LAT 44 46 52 LONG 093 13 10)									
OCT., 1974									
21...	69	,09	7	2	5,1	1,4	,00	,00	1,4
JUNE, 1975									
18...	85	,12	4	3	6,8	1,4	,01	,01	1,4
444735093100900 - THOMAS LAKE AT EAGAN VILLAGE, MINN (LAT 44 47 35 LONG 093 10 09)									
OCT., 1974									
18...	140	,19	16	8	19	6,6	,16	,01	6,8
JUNE, 1975									
04...	114	,16	12	6	16	2,4	,00	,00	2,4
444745093095700 - WILDERNESS LAKE AT EAGAN VILLAGE, MINN (LAT 44 47 45 LONG 093 09 57)									
OCT., 1974									
24...	113	,15	38	20	8,2	6,2	,33	,33	6,5
JUNE, 1975									
04...	98	,13	0	4	8,0	4,5	,05	,05	4,6

DATE	DIS-SOLVED ORTHO, PHOS-PHORUS (P) (MG/L) (00671)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)	TOTAL NITRO-GEN IN BOTTOM MATERI-AL (N) (MG/KG) (00603)	TOTAL PHOS-PHORUS IN BOT-TOM MA-TERIAL (MG/KG) (00668)	IN-ORGANIC CARBON IN BOT-TOM MA-TERIAL (G/KG) (00686)	ORGANIC CARBON IN BOT-TOM MA-TERIAL (C) (G/KG) (00687)	TOTAL NITRO-GEN (NO3) (MG/L) (71887)	DIS-SOLVED ORTHO PHOS-PHATE (PO4) (MG/L) (00660)
444522093102600 - LONG LAKE AT APPLE VALLEY, MINN (LAT 44 45 22 LONG 093 10 26)									
OCT., 1974									
31...	.00	.19	29	70	143	<.1	--	18	.00
JUNE, 1975									
23...	.21	.21	7.7	9600	50	--	38	14	.64
444843093090500 - MCCARTHY LAKE AT EAGAN VILLAGE, MINN (LAT 44 48 43 LONG 093 09 05)									
OCT., 1974									
18...	.01	.08	15	40	170	2.4	--	6.7	.03
JUNE, 1975									
13...	.02	.05	7.6	9700	86	--	47	3.5	.06
445115093062100 - SHANAHAN POND AT EAGAN VILLAGE, MINN (LAT 44 51 15 LONG 093 06 21)									
OCT., 1974									
22...	.04	.14	32	140	93	<.1	--	14	.12
JUNE, 1975									
16...	.00	.06	14	10800	50	--	49	7.1	.00
444652093131000 - SLATER'S ACRES POND AT EAGAN VILLAGE, MINN (LAT 44 46 52 LONG 093 13 10)									
OCT., 1974									
21...	.01	.23	15	6200	233	<.1	--	6.2	.03
JUNE, 1975									
18...	.08	.16	12	6800	53	--	39	6.2	.25
444735093100900 - THOMAS LAKE AT EAGAN VILLAGE, MINN (LAT 44 47 35 LONG 093 10 09)									
OCT., 1974									
18...	.02	.13	37	6700	190	<.1	--	30	.06
JUNE, 1975									
04...	.00	.04	17	16400	53	--	9.0	11	.00
444745093095700 - WILDERNESS LAKE AT EAGAN VILLAGE, MINN (LAT 44 47 45 LONG 093 09 57)									
OCT., 1974									
24...	.00	.32	19	2100	157	<.1	--	29	.00
JUNE, 1975									
04...	.02	.02	12	9700	16	--	36	20	.06

444500093150000 ALIMAGNET LAKE AT APPLE VALLEY, MINN
LAT 44-45-00 LONG 093-15-00 SEQ 00

JUNE 24, 1975
1300 HOURS

IDENTIFICATION OF PHYTOPLANKTON

1,200 CELLS/ML

_ORGANISM__NAME	_COMMON__NAME	CELLS/ML	PER_CENT
CHLOROPHYTA	GREEN ALGAE		
.CHLOROPHYCEAE			
..CHLOROCOCCALES			
...CHARACIACEAE			
....SCHROEDERIA		92	8
....SCHROEDERIA		9	1
....SCHROEDERIA		120	10
CYANOPHYTA	BLUE-GREEN ALGAE		
.MYXOPHYCEAE			
..CHROOCOCCALES	COCCOID		
...CHROOCOCCACEAE			
D ....ANACYSTIS		210	18
..OSCILLATORIALES	FILAMENTOUS		
...NOSTOCACEAE			
D ....APHANIZOMENON		760	64

NOTE: D - DOMINANT ORGANISM! GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.690
CLASS 0.690
ORDER 1.305
FAMILY 1.305
GENERA 1.305

444912093110000 BLACKHAWK LAKE AT EAGAN VILLAGE, MINN
LAT 44-49-12 LONG 093-11-00 SEQ 00

JUNE 5, 1975
1030 HOURS

IDENTIFICATION OF PHYTOPLANKTON

780 CELLS/ML

_ORGANISM__NAME	_COMMON__NAME	CELLS/ML	PER_CENT
CHLOROPHYTA	GREEN ALGAE		
.CHLOROPHYCEAE			
..CHLOROCOCCALES			
...CHARACIACEAE			
D ....SCHROEDERIA		780	100

NOTE: D - DOMINANT ORGANISM! GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE

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                444912093110000  BLACKHAWK LAKE AT EAGAN VILLAGE, MINN
                      LAT 44-49-12   LONG 093-11-00   SEQ 00

                                OCT. 21, 1974
                                 1030 HOURS

                        IDENTIFICATION OF PHYTOPLANKTON

                              2,500,000 CELLS/ML

   _ORGANISM__NAME______________   _COMMON__NAME______  CELLS/ML       PER_CENT

   CHLOROPHYTA                     GREEN ALGAE
   .CHLOROPHYCEAE
   ..CHLOROCOCCALES
   ...OOCYSTACEAE
L  ....ANKISTRODESMUS                                                      0
   CHRYSOPHYTA
   .BACILLARIOPHYCEAE              DIATOMS
   ..CENTRALES                     CENTRIC
   ...COSCINODISCACEAE
L  ....CYCLOTELLA                                                          0
   ..PENNALES                      PENNATE
   ...FRAGILARIACEAE
L  ....SYNEDRA                                                             0
   .CHRYSOPHYCEAE                  YELLOW-BROWN ALGAE
   ..CHRYSOMONADALES
   ...OCHROMONADACEAE
L  ....OCHROMONAS                                                          0
   CYANOPHYTA                      BLUE-GREEN ALGAE
   .MYXOPHYCEAE
   ..CHROOCOCCALES                 COCCOID
   ...CHROOCOCCACEAE
   ....AGMENELLUM                                         76,000           3
D  ....ANACYSTIS                                         510,000          20
   ....GOMPHOSPHAERIA                                     16,000           1
   ..OSCILLATORIALES               FILAMENTOUS
   ...NOSTOCACEAE
   ....ANABAENA                                          210,000           8
   ...OSCILLATORIACEAE
D  ....LYNGBYA                                         1,700,000          68
L  ....SPIRULINA                                                           0
NOTE: D - DOMINANT ORGANISM; GREATER OR EQUAL TO 15%
      L - LESS THEN 1%; MAY NOT HAVE BEEN ACTUALLY COUNTED
      ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
      DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
                        PHYL/DIV 0.039
                           CLASS 0.043
                           ORDER 0.833
                          FAMILY 1.206
                          GENERA 1.389

                444733093120900  HOESEL POND AT EAGAN VILLAGE, MINN
                      LAT 44-47-33   LONG 093-12-09   SEQ 00

                                OCT. 30, 1974
                                 1230 HOURS

                        IDENTIFICATION OF PHYTOPLANKTON

                              7,600,000 CELLS/ML
   _ORGANISM__NAME______________   _COMMON__NAME______  CELLS/ML       PER_CENT

   CHLOROPHYTA                     GREEN ALGAE
   .CHLOROPHYCEAE
   ..CHLOROCOCCALES
   ...OOCYSTACEAE
L  ....ANKISTRODESMUS                                                      0
   ...SCENEDESMACEAE
L  ....ACTINASTRUM                                                         0
L  ....SCENEDESMUS                                                         0
   ..VOLVOCALES
   ...CHLAMYDOMONADACEAE
L  ....CHLAMYDOMONAS                                                       0
   CHRYSOPHYTA
   .CHRYSOPHYCEAE                  YELLOW-BROWN ALGAE
   ..CHRYSOMONADALES
   ...OCHROMONADACEAE
L  ....OCHROMONAS                                                          0
   CYANOPHYTA                      BLUE-GREEN ALGAE
   .MYXOPHYCEAE
   ..CHROOCOCCALES                 COCCOID
   ...CHROOCOCCACEAE
   ....ANACYSTIS                                          47,000           1
   ..OSCILLATORIALES               FILAMENTOUS
   ...OSCILLATORIACEAE
D  ....LYNGBYA                                         2,300,000          30
D  ....LYNGBYA                                         4,600,000          61
   ....OSCILLATORIA                                      630,000           8
   EUGLENOPHYTA                    EUGLENOIDS
   .EUGLENOPHYCEAE
   ..EUGLENALES
   ...EUGLENACEAE
L  ....EUGLENA                                                             0
L  ....TRACHELOMONAS                                                       0
NOTE: D - DOMINANT ORGANISM; GREATER OR EQUAL TO 15%
      L - LESS THEN 1%; MAY NOT HAVE BEEN ACTUALLY COUNTED
      ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
      DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
                        PHYL/DIV 0.028
                           CLASS 0.028
                           ORDER 0.083
                          FAMILY 0.084
                          GENERA 0.496
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444733093120900 BOESEL POND AT EAGAN VILLAGE, MINN
LAT 44-47-33 LONG 093-12-09 SEQ 00

JUNE 13, 1975
1015 HOURS

IDENTIFICATION OF PHYTOPLANKTON

320,000 CELLS/ML

	_ORGANISM__NAME_______________	_COMMON__NAME______	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
	....ANKISTRODESMUS		2,500	1
L	....TETRAEDRON			0
	...SCENEDESMACEAE			
	....SCENEDESMUS		41,000	13
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..PENNALES	PENNATE		
	...NITZSCHIACEAE			
L	....NITZSCHIA			0
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..CHROOCOCCALES	COCCOID		
	...CHROOCOCCACEAE			
	....ANACYSTIS		34,000	11
	..OSCILLATORIALES	FILAMENTOUS		
	...OSCILLATORIACEAE			
D	....OSCILLATORIA		240,000	75
	EUGLENOPHYTA	EUGLENOIDS		
	.EUGLENOPHYCEAE			
	..EUGLENALES			
	...EUGLENACEAE			
L	....TRACHELOMONAS			0

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
L - LESS THAN 1% MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.615
CLASS 0.615
ORDER 1.095
FAMILY 1.144
GENERA 1.150

MISCELLANEOUS ANALYSES OF LAKES IN MINNESOTA

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        445026093065100  BURVIEW PARK POND AT EAGAN VILLAGE. MINN
              LAT 44-50-26   LONG 093-06-51   SEQ 00

                          OCT. 23. 1974
                           1030 HOURS

                    IDENTIFICATION OF PHYTOPLANKTON

                        1.400.000 CELLS/ML
   _ORGANISM__NAME_____________  _COMMON__NAME______  CELLS/ML      PER_CENT

   CHLOROPHYTA                   GREEN ALGAE
   .CHLOROPHYCEAE
   ..CHLOROCOCCALES
   ...OOCYSTACEAE
 L ....CHODATELLA                                                      0
   ...SCENEDESMACEAE
 L ....SCENEDESMUS                                                     0
   CHRYSOPHYTA
   .BACILLARIOPHYCEAE            DIATOMS
   ..PENNALES                    PENNATE
   ...CYMBELLACEAE
 L ....EPITHEMIA                                                       0
   ...FRAGILARIACEAE
 L ....SYNEDRA                                                         0
   CYANOPHYTA                    BLUE-GREEN ALGAE
   .MYXOPHYCEAE
   ..CHROOCOCCALES               COCCOID
   ...CHROOCOCCACEAE
 D ....AGMENELLUM                                    700.000          51
 D ....ANACYSTIS                                     650.000          48
   ..OSCILLATORIALES             FILAMENTOUS
   ...NOSTOCACEAE
   ....ANABAENA                                        6.900           1
   ...OSCILLATORIACEAE
   ....OSCILLATORIA                                   11.000           1
   EUGLENOPHYTA                  EUGLENOIDS
   .EUGLENOPHYCEAE
   ..EUGLENALES
   ...EUGLENACEAE
 L ....TRACHELOMONAS                                                   0
NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
      L - LESS THAN 1%: MAY NOT HAVE BEEN ACTUALLY COUNTED
      ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER . 200-X MICROSCOPE
      DIVERSITY INDICES. BASED ON ACTUAL COUNTS:
                        PHYL/DIV 0.038
                           CLASS 0.038
                           ORDER 0.137
                          FAMILY 0.151
                          GENERA 1.134
      444421093124500  CEDAR GROVE POND AT EAGAN VILLAGE. MINN
              LAT 44-44-21   LONG 093-12-45   SEQ 00

                          NOV. 4. 1974
                           1200 HOURS

                    IDENTIFICATION OF PHYTOPLANKTON

                         620.000 CELLS/ML
   _ORGANISM__NAME_____________  _COMMON__NAME______  CELLS/ML      PER_CENT

   CHLOROPHYTA                   GREEN ALGAE
   .CHLOROPHYCEAE
   ..CHLOROCOCCALES
   ...OOCYSTACEAE
 L ....SELENASTRUM                                                     0
   ...SCENEDESMACEAE
   ....ACTINASTRUM                                    15.000           3
 L ....SCENEDESMUS                                                     0
   ..VOLVOCALES
   ...CHLAMYDOMONADACEAE
 L ....CHLAMYDOMONAS                                                   0
   CHRYSOPHYTA
   .BACILLARIOPHYCEAE            DIATOMS
   ..PENNALES                    PENNATE
   ...NITZSCHIACEAE
 L ....NITZSCHIA                                                       0
   CYANOPHYTA                    BLUE-GREEN ALGAE
   .MYXOPHYCEAE
   ..CHROOCOCCALES               COCCOID
   ...CHROOCOCCACEAE
 L ....AGMENELLUM                                                      0
   ....ANACYSTIS                                      37.000           6
   ..OSCILLATORIALES             FILAMENTOUS
   ...NOSTOCACEAE
   ....ANABAENA                                        9.600           2
   ...OSCILLATORIACEAE
 D ....LYNGBYA                                       130.000          22
 D ....OSCILLATORIA                                  420.000          68
   EUGLENOPHYTA                  EUGLENOIDS
   .CRYPTOPHYCEAE                CRYPTOMONADS
   ..CRYPTOMONADALES
   ...CRYPTOMONADACEAE
 L ....CRYPTOMONAS                                                     0
   .EUGLENOPHYCEAE
   ..EUGLENALES
   ...EUGLENACEAE
 L ....TRACHELOMONAS                                                   0
NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
      L - LESS THAN 1%: MAY NOT HAVE BEEN ACTUALLY COUNTED
      ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER . 200-X MICROSCOPE
      DIVERSITY INDICES. BASED ON ACTUAL COUNTS:
                        PHYL/DIV 0.192
                           CLASS 0.193
                           ORDER 0.529
                          FAMILY 0.648
                          GENERA 1.380
        445026093065100  BURVIEW PARK POND AT EAGAN VILLAGE, MINN
               LAT 44-50-26   LONG 093-06-51   SEQ 00

                          JUNE 16, 1975
                           1000 HOURS

                  IDENTIFICATION OF PHYTOPLANKTON

                         130,000 CELLS/ML

  _ORGANISM__NAME_______________  _COMMON__NAME______  CELLS/ML     PER_CENT

  CHLOROPHYTA                     GREEN ALGAE
  .CHLOROPHYCEAE
  ..CHLOROCOCCALES
  ...OCCYSTACEAE
  ....ANKISTRODESMUS                                    3,200          2
  ....KIRCHNERIELLA                                       910          1
  ....SELENASTRUM                                       1,600          1
L ....TETRAEDRON                                                       0
  ...SCENEDESMACEAE
  ....SCENEDESMUS                                       4,500          3
  ..ZYGNEMATALES
  ...DESMIDIACEAE                 PLACODERM DESMIDS
L ....STAURASTRUM                                                      0
  CHRYSOPHYTA
  .BACILLARIOPHYCEAE              DIATOMS
  ..PENNALES                      PENNATE
  ...CYMBELLACEAE
L ....EPITHEMIA                                                        0
  ...NAVICULACEAE                 NAVICULOID
L ....NAVICULA                                                         0
  ...NITZSCHIACEAE
L ....NITZSCHIA                                                        0
  CYANOPHYTA                      BLUE-GREEN ALGAE
  .MYXOPHYCEAE
  ..CHROOCOCCALES                 COCCOID
  ...CHROOCOCCACEAE
D ....ANACYSTIS                                        85,000         64
  ....GOMPHOSPHAERIA                                   12,000          9
  ..OSCILLATORIALES               FILAMENTOUS
  ...NOSTOCACEAE
  ....ANABAENA                                          1,800          1
  ....ANABAENA                                          5,600          4
  ....APHANIZOMENON                                     1,200          1
  ...OSCILLATORIACEAE
  ....LYNGBYA                                          17,000         13
  EUGLENOPHYTA                    EUGLENOIDS
  .EUGLENOPHYCEAE
  ..EUGLENALES
  ...EUGLENACEAE
L ....TRACHELOMONAS                                                    0
  PYRRHOPHYTA
  .DINOPHYCEAE                    DINOFLAGELLATES
  ..PERIDINIALES
  ...CERATIACEAE
L ....CERATIUM                                                         0
  ...GLENODINIACEAE
L ....GLENODINIUM                                                      0

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
      L - LESS THEN 1%: MAY NOT HAVE BEEN ACTUALLY COUNTED
      ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
      DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
                        PHYL/DIV 0.467
                           CLASS 0.467
                           ORDER 1.156
                          FAMILY 1.415
                          GENERA 1.900

        445035093074600  DONALDSON'S POND AT EAGAN VILLAGE,MINN
               LAT 44-50-35   LONG 093-07-46   SEQ 00

                          JUNE 12, 1975
                           1315 HOURS

                  IDENTIFICATION OF PHYTOPLANKTON

                          1,200 CELLS/ML

  _ORGANISM__NAME_______________  _COMMON__NAME______  CELLS/ML     PER_CENT

  CHLOROPHYTA                     GREEN ALGAE
  .CHLOROPHYCEAE
  ..CHLOROCOCCALES
  ...CHARACIACEAE
D ....SCHROEDERIA                                       1,200        100

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
      ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
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MISCELLANEOUS ANALYSES OF LAKES IN MINNESOTA

445035093074600 DONALDSON'S POND AT EAGAN VILLAGE,MINN
LAT 44-50-35 LONG 093-07-46 SEQ 00

OCT. 29, 1974
1100 HOURS

IDENTIFICATION OF PHYTOPLANKTON

2,100 CELLS/ML

_ORGANISM__NAME_______________	_COMMON__NAME_______	CELLS/ML	PER_CENT
CHLOROPHYTA	GREEN ALGAE		
.CHLOROPHYCEAE			
..CHLOROCOCCALES			
...CHARACIACEAE			
....SCHROEDERIA		180	9
...OOCYSTACEAE			
....QUADRIGULA		100	5
..VOLVOCALES			
...CHLAMYDOMONADACEAE			
....CHLAMYDOMONAS		81	4
CHRYSOPHYTA			
.CHRYSOPHYCEAE	YELLOW-BROWN ALGAE		
..CHRYSOMONADALES			
...OCHROMONADACEAE			
D ....OCHROMONAS		1,500	74
EUGLENOPHYTA	EUGLENOIDS		
.CRYPTOPHYCEAE	CRYPTOMONADS		
..CRYPTOMONADALES			
...CRYPTOMONADACEAE			
....CRYPTOMONAS		140	7
.EUGLENOPHYCEAE			
..EUGLENALES			
...EUGLENACEAE			
....PHACUS		20	1
....TRACHELOMONAS		20	1

NOTE: D - DOMINANT ORGANISM; GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 1.077
CLASS 1.144
ORDER 1.279
FAMILY 1.408
GENERA 1.426

444500093045200 FARQUAR LAKE AT APPLE VALLEY, MINN
LAT 44-45-00 LONG 093-04-52 SEQ 00

OCT. 31, 1974
1100 HOURS

IDENTIFICATION OF PHYTOPLANKTON

1,700,000 CELLS/ML

_ORGANISM__NAME_______________	_COMMON__NAME_______	CELLS/ML	PER_CENT
CHLOROPHYTA	GREEN ALGAE		
.CHLOROPHYCEAE			
..CHLOROCOCCALES			
...SCENEDESMACEAE			
L ....SCENEDESMUS			0
CYANOPHYTA	BLUE-GREEN ALGAE		
.MYXOPHYCEAE			
..CHROOCOCCALES	COCCOID		
...CHROOCOCCACEAE			
....AGMENELLUM		8,500	1
D ....ANACYSTIS		420,000	25
..OSCILLATORIALES	FILAMENTOUS		
...NOSTOCACEAE			
D ....APHANIZOMENON		740,000	44
...OSCILLATORIACEAE			
D ....LYNGBYA		500,000	30
....OSCILLATORIA		19,000	1
EUGLENOPHYTA	EUGLENOIDS		
.EUGLENOPHYCEAE			
..EUGLENALES			
...EUGLENACEAE			
L ....TRACHELOMONAS			0

NOTE: D - DOMINANT ORGANISM; GREATER OR EQUAL TO 15%
L - LESS THAN 1%; MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.033
CLASS 0.033
ORDER 0.846
FAMILY 1.575
GENERA 1.680

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                 444923093095400  FISH LAKE AT EAGAN VILLAGE, MINN
                      LAT 44-49-23   LONG 093-09-54   SEQ 00

                                 OCT. 24, 1974
                                  1330 HOURS

                        IDENTIFICATION OF PHYTOPLANKTON

                                 520 CELLS/ML

  _ORGANISM__NAME_______________   _COMMON__NAME______  CELLS/ML       PER_CENT

  CHLOROPHYTA                      GREEN ALGAE
  .CHLOROPHYCEAE
  ..CHLOROCOCCALES
  ...OOCYSTACEAE
  ....QUADRIGULA                                            27              5
  CYANOPHYTA                       BLUE-GREEN ALGAE
  .MYXOPHYCEAE
  ..CHROOCOCCALES                  COCCOID
  ...CHROOCOCCACEAE
# ....GOMPHOSPHAERIA                                       430             82
  ..OSCILLATORIALES                FILAMENTOUS
  ...NOSTOCACEAE
  ....APHANIZOMENON                                         54             10
  EUGLENOPHYTA                     EUGLENOIDS
  .EUGLENOPHYCEAE
  ..EUGLENALES
  ...EUGLENACEAE
  ....TRACHELOMONAS                                         13              3

NOTE: # - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
      ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
      DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
                          PHYL/DIV 0.662
                             CLASS 0.662
                             ORDER 0.926
                            FAMILY 0.926
                            GENERA 0.926

                 445123093071400  HAUSER POND AT EAGAN VILLAGE, MINN
                      LAT 44-51-23   LONG 093-07-14   SEQ 00

                                 OCT. 22, 1974
                                  1000 HOURS

                        IDENTIFICATION OF PHYTOPLANKTON

                                 360 CELLS/ML

  _ORGANISM__NAME_______________   _COMMON__NAME______  CELLS/ML       PER_CENT

  CHLOROPHYTA                      GREEN ALGAE
  .CHLOROPHYCEAE
  ..CHLOROCOCCALES
  ...SCENEDESMACEAE
  ....SCENEDESMUS                                           27              7
  ..ZYGNEMATALES
  ...DESMIDIACEAE                  PLACODERM DESMIDS
  ....CLOSTERIUM                                             3              1
  CHRYSOPHYTA
  .BACILLARIOPHYCEAE               DIATOMS
  ..PENNALES                       PENNATE
  ...FRAGILARIACEAE
  ....SYNEDRA                                               10              3
  ...NAVICULACEAE                  NAVICULOID
  ....NAVICULA                                              10              3
  CYANOPHYTA                       BLUE-GREEN ALGAE
  .MYXOPHYCEAE
  ..CHROOCOCCALES                  COCCOID
  ...CHROOCOCCACEAE
# ....ANACYSTIS                                            230             63
  EUGLENOPHYTA                     EUGLENOIDS
  .CRYPTOPHYCEAE                   CRYPTOMONADS
  ..CRYPTOMONADALES
  ...CRYPTOMONADACEAE
  ....CRYPTOMONAS                                           44             12
  ....CRYPTOMONAS                                           37             10
  .EUGLENOPHYCEAE
  ..EUGLENALES
  ...EUGLENACEAE
  ....EUGLENA                                                7              2
  ....TRACHELOMONAS                                          3              1

NOTE: # - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
      ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
      DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
                          PHYL/DIV 1.437
                             CLASS 1.558
                             ORDER 1.599
                            FAMILY 1.652
                            GENERA 1.677
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                444923093095800  FISH LAKE AT EAGAN VILLAGE, MINN
                   LAT 44-49-23   LONG 093-09-58   SEQ 00

                             JUNE 20, 1975
                              1000 HOURS

                     IDENTIFICATION OF PHYTOPLANKTON

                             170 CELLS/ML

  _ORGANISM__NAME______________   _COMMON__NAME______  CELLS/ML      PER_CENT

  CHLOROPHYTA                     GREEN ALGAE
  .CHLOROPHYCEAE
  ..CHLOROCOCCALES
  ...OCCYSTACEAE
  ....ANKISTRODESMUS                                       19            11
  CHRYSOPHYTA
  .CHRYSOPHYCEAE                  YELLOW-BROWN ALGAE
  ..CHRYSOMONADALES
  ...OCHROMUNADACEAE
D ....DINOBRYON                                           130            78
  PYRRHOPHYTA
  .DINOPHYCEAE                    DINOFLAGELLATES
  ..PERIDINIALES
  ...CERATIACEAE
  ....CERATIUM                                             19            11


NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
      DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
                          PHYL/DIV 0.986
                             CLASS 0.986
                             ORDER 0.986
                            FAMILY 0.986
                            GENERA 0.986

                445123093071400  HAUSER POND AT EAGAN VILLAGE, MINN
                   LAT 44-51-23   LONG 093-07-14   SEQ 00

                             JUNE 12, 1975
                              1100 HOURS

                     IDENTIFICATION OF PHYTOPLANKTON

                            3,500 CELLS/ML

  _ORGANISM__NAME______________   _COMMON__NAME______  CELLS/ML      PER_CENT

  CHLOROPHYTA                     GREEN ALGAE
  .CHLOROPHYCEAE
  ..CHLOROCOCCALES
  ...CHARACIACEAE
  ....SCHROEDERIA                                          46             1
  ..ZYGNEMATALES
  ...DESMIDIACEAE                 PLACODERM DESMIDS
  ....CLOSTERIUM                                           46             1
  CHRYSOPHYTA
  .BACILLARIOPHYCEAE              DIATOMS
  ..PENNALES                      PENNATE
  ...FRAGILARIACEAE
  ....FRAGILARIA                                          140             4
  ....SYNEDRA                                              92             3
  ...NAVICULACEAE                 NAVICULOID
  ....NAVICULA                                            280             8
  ....PINNULARIA                                          140             4
  ....STAURONEIS                                           92             3
  .CHRYSOPHYCEAE                  YELLOW-BROWN ALGAE
  ..CHRYSOMONADALES
  ...OCHROMONADACEAE
  ....DINOBRYON                                            92             3
  CYANOPHYTA                      BLUE-GREEN ALGAE
  .MYXOPHYCEAE
  ..CHROOCOCCALES                 COCCOID
  ...CHROOCOCCACEAE
D ....ANACYSTIS                                         2,300            67
  EUGLENOPHYTA                    EUGLENOIDS
  .EUGLENOPHYCEAE
  ..EUGLENALES
  ...EUGLENACEAE
  ....EUGLENA                                             140             4
  ....PHACUS                                               46             1
  ....TRACHELOMONAS                                        46             1


NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
      ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
      DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
                          PHYL/DIV 1.284
                             CLASS 1.405
                             ORDER 1.431
                            FAMILY 1.623
                            GENERA 1.989
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MISCELLANEOUS ANALYSES OF LAKES IN MINNESOTA

444717093083100 HOLLAND LAKE AT EAGAN VILLAGE, MINN
LAT 44-47-17 LONG 093-08-31 SEQ 00

OCT. 17, 1974
1000 HOURS

IDENTIFICATION OF PHYTOPLANKTON

1,000 CELLS/ML

	_ORGANISM__NAME	_COMMON__NAME	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..VOLVOCALES			
	...CHLAMYDOMONADACEAE			
	....CHLAMYDOMONAS		140	14
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..PENNALES	PENNATE		
	...FRAGILARIACEAE			
	....SYNEDRA		27	3
	.CHRYSOPHYCEAE	YELLOW-BROWN ALGAE		
	..CHRYSOMONADALES			
	...MALLOMONADACEAE			
D	....MALLOMONAS		540	54
	EUGLENOPHYTA	EUGLENOIDS		
	.CRYPTOPHYCEAE	CRYPTOMONADS		
	..CRYPTOMONIDALES			
	...CRYPTOMONODACEAE			
D	....CRYPTOMONAS		300	30

NOTE: D = DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 1.374
CLASS 1.531
ORDER 1.531
FAMILY 1.531
GENERA 1.531

444717093083100 HOLLAND LAKE AT EAGAN VILLAGE, MINN
LAT 44-47-17 LONG 093-08-31 SEQ 00

JUNE 19, 1975
1000 HOURS

IDENTIFICATION OF PHYTOPLANKTON

2,100 CELLS/ML

	_ORGANISM__NAME	_COMMON__NAME	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
L	....ANKISTRODESMUS			0
	....DICTYOSPHAERIUM		220	10
	....KIRCHNERIELLA		54	3
	....QUADRIGULA		36	2
	...SCENEDESMACEAE			
	....SCENEDESMUS		36	2
	..VOLVOCALES			
	...VOLVOCACEAE			
	....PANDORINA		290	14
	..ZYGNEMATALES			
	...DESMIDIACEAE	PLACODERM DESMIDS		
	....EUASTRUM		18	1
	CHRYSOPHYTA			
	.CHRYSOPHYCEAE	YELLOW-BROWN ALGAE		
	..CHRYSOMONADALES			
	...OCHROMONADACEAE			
	....DINOBRYON		190	9
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..CHROOCOCCALES	COCCOID		
	...CHROOCOCCACEAE			
D	....ANACYSTIS		1,100	52
	..OSCILLATORIALES	FILAMENTOUS		
	...NOSTOCACEAE			
	....ANABAENA		90	4
	EUGLENOPHYTA	EUGLENOIDS		
	.CRYPTOPHYCEAE	CRYPTOMONADS		
	..CRYPTOMONIDALES			
	...CRYPTOMONODACEAE			
	....CRYPTOMONAS		45	2

NOTE: D = DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
L = LESS THEN 1%: MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 1.426
CLASS 1.426
ORDER 2.014
FAMILY 2.095
GENERA 2.296

445138093055304 HORNBEAM LAKE AT INVER GROVE HEIGHTS, MINN.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPERATURE (DEG C) (00020)	TEMPERATURE (DEG C) (00010)	DISSOLVED OXYGEN (MG/L) (00300)	PERCENT SATURATION (00301)	CARBON DIOXIDE (CO2) (MG/L) (00405)	PH (UNITS) (00400)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L) (70300)	DISSOLVED SOLIDS (TONS PER AC-FT) (70303)
FEB. 04...	1000	-3.0	1.0	3.2	24	11	7.4	280	158	.21
JUNE 27...	1200	28.0	26.0	8.5	106	.3	8.7	183	120	.16

DATE	SUSPENDED SOLIDS (MG/L) (70299)	TURBIDITY (JTU) (00070)	DISSOLVED CALCIUM (CA) (MG/L) (00915)	DISSOLVED SODIUM (NA) (MG/L) (00930)	ALKALINITY AS CACO3 (MG/L) (00410)	DISSOLVED CHLORIDE (CL) (MG/L) (00940)	TOTAL KJELDAHL NITROGEN (N) (MG/L) (00625)	SUSPENDED KJEL. NITROGEN (N) (MG/L) (00624)	DISSOLVED KJEL. NITROGEN (N) (MG/L) (00623)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)
FEB. 04...	4	4	31	4.7	135	5.1	2.4	2.0	.44	.05
JUNE 27...	20	3	26	4.1	85	3.9	1.5	.72	.78	.01

DATE	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	TOTAL NITROGEN (N) (MG/L) (00600)	TOTAL PHOSPHORUS (P) (MG/L) (00665)	DISSOLVED PHOSPHORUS (P) (MG/L) (00666)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)	DISSOLVED SILICA (SIO2) (MG/L) (00955)	FECAL COLIFORM (COL. PER 100 ML) (31616)	STREPTOCOCCI (COLONIES PER 100 ML) (31673)	TOTAL NITROGEN (NO3) (MG/L) (71887)	TOTAL ALUMINUM IN BOTTOM MATERIAL (UG/G) (01108)
FEB. 04...	.05	2.4	.07	.00	11	1.1	0	0	11	12000
JUNE 27...	.00	1.5	.06	.01	6.3	.3	--	--	6.7	--

DATE	TOTAL ARSENIC IN BOTTOM MATERIAL (UG/G) (01003)	TOTAL CADMIUM IN BOTTOM MATERIAL (UG/G) (01028)	ORGANIC CARBON IN BOTTOM MATERIAL (C) (G/KG) (00687)	TOTAL CHROMIUM IN BOTTOM MATERIAL (UG/G) (01029)	TOTAL COPPER IN BOTTOM MATERIAL (UG/G) (01043)	TOTAL LEAD IN BOTTOM MATERIAL (UG/G) (01052)	TOTAL MERCURY IN BOTTOM MATERIAL (UG/G) (71921)	TOTAL NITROGEN IN BOTTOM MATERIAL (N) (MG/KG) (00603)	TOTAL PHOSPHORUS IN BOTTOM MATERIAL (MG/KG) (00668)	TOTAL ZINC IN BOTTOM MATERIAL (UG/G) (01093)
FEB. 04...	6	<1	42	13	25	4000	.0	6000	220	76
JUNE 27...	--	--	--	--	--	--	--	--	--	--

MISCELLANEOUS ANALYSES OF LAKES IN MINNESOTA

445138093055304 HORNBEAM LAKE AT INVER GROVE HEIGHTS, MINN.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

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                          JUNE 27, 1975
                           1200 HOURS

                  IDENTIFICATION OF PHYTOPLANKTON

                        250,000 CELLS/ML

   _ORGANISM__NAME______________   _COMMON__NAME______  CELLS/ML     PER_CENT

   CHLOROPHYTA                     GREEN ALGAE
   .CHLOROPHYCEAE
   ..CHLOROCOCCALES
   ...COELASTRACEAE
   ....COELASTRUM                                          1,900          1
   ...OOCYSTACEAE
   ....ANKISTRODESMUS                                      2,700          1
   ...SCENEDESMACEAE
 L ....CRUCIGENIA                                                         0
   ....SCENEDESMUS                                         2,100          1
   CHRYSOPHYTA
   .CHRYSOPHYCEAE                  YELLOW-BROWN ALGAE
   ..CHRYSOMONADALES
   ...OCHROMONADACEAE
   ....DINOBRYON                                           1,500          1
 L ....UROGLENA                                                           0
   CYANOPHYTA                      BLUE-GREEN ALGAE
   .MYXOPHYCEAE
   ..CHROOCOCCALES                 COCCOID
   ...CHROOCOCCACEAE
   ....ANACYSTIS
 D .....ANACYSTIS INCERTA                                120,000         47
   ....ANACYSTIS                                          15,000          6
   ....GOMPHOSPHAERIA                                     12,000          5
   ..OSCILLATORIALES               FILAMENTOUS
   ...OSCILLATORIACEAE
 D ....OSCILLATORIA                                       94,000         38
   EUGLENOPHYTA                    EUGLENOIDS
   .EUGLENOPHYCEAE
   ..EUGLENALES
   ...EUGLENACEAE
 L ....EUGLENA                                                            0
 L ....PHACUS                                                             0
 L ....TRACHELOMONAS                                                      0
   PYRRHOPHYTA
   .DINOPHYCEAE                    DINOFLAGELLATES
   ..PERIDINIALES
   ...CERATIACEAE
 L ....CERATIUM                                                           0
   ...GLENODINIACEAE
 L ....GLENODINIUM                                                        0


NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
      L - LESS THEN 1%: MAY NOT HAVE BEEN ACTUALLY COUNTED
      ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
      DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
                        PHYL/DIV 0.280
                           CLASS 0.280
                           ORDER 1.211
                          FAMILY 1.256
                          GENERA 1.510
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445141093060303 HORNBEAM LAKE AT INVER GROVE HEIGHTS, MINN.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPER-ATURE (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	DIS-SOLVED OXYGEN (MG/L) (00300)	PER-CENT SATUR-ATION (00301)	CARBON DIOXIDE (CO2) (MG/L) (00405)	PH (UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)
FEB. 04...	1045	-3.0	1.0	1.0	8	11	7.8	290	179	.24
JUNE 27...	1130	28.0	26.0	8.2	102	.9	8.3	185	117	.16

DATE	SUS-PENDED SOLIDS (MG/L) (70299)	TUR-BID-ITY (JTU) (00070)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	ALKA-LINITY AS CACO3 (MG/L) (00410)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L) (00625)	SUS-PENDED KJEL. NITRO-GEN (N) (MG/L) (00624)	DIS-SOLVED KJEL. NITRO-GEN (N) (MG/L) (00623)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)
FEB. 04...	6	3	30	4.8	135	5.6	2.5	.60	1.9	.05
JUNE 27...	16	3	20	3.9	87	3.9	1.4	.20	1.2	.02

DATE	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	TOTAL NITRO-GEN (N) (MG/L) (00600)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOL-VED PHOS-PHORUS (P) (MG/L) (00666)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	FECAL COLI-FORM (COL. PER 100 ML) (31616)	STREP-TOCOCCI (COL-ONIES PER 100 ML) (31679)	TOTAL NITRO-GEN (NO3) (MG/L) (71887)	TOTAL ALUMI-NUM IN BOTTOM MA-TERIAL (UG/G) (01108)
FEB. 04...	.05	2.5	.07	.00	19	1.0	0	2	11	8500
JUNE 27...	.02	1.4	.08	.01	10	.4	--	--	6.3	--

DATE	TOTAL ARSENIC IN BOTTOM MA-TERIAL (UG/G) (01003)	TOTAL CADMIUM IN BOTTOM MA-TERIAL (UG/G) (01028)	ORGANIC CARBON IN BOT-TOM MA-TERIAL (C) (G/KG) (00687)	TOTAL CHRO-MIUM IN BOTTOM MA-TERIAL (UG/G) (01029)	TOTAL COPPER IN BOTTOM MA-TERIAL (UG/G) (01043)	TOTAL LEAD IN BOTTOM MA-TERIAL (UG/G) (01052)	TOTAL MERCURY IN BOTTOM MA-TERIAL (UG/G) (71921)	TOTAL NITRO-GEN IN BOTTOM MATERI-AL (N) (MG/KG) (00603)	TOTAL PHOS-PHORUS IN BOT-TOM MA-TERIAL (MG/KG) (00668)	TOTAL ZINC IN BOTTOM MA-TERIAL (UG/G) (01093)
FEB. 04...	7	2	69	10	46	90	.0	9500	350	98
JUNE 27...	--	--	--	--	--	--	--	--	--	--

FEB. 4, 1975
1045 HOURS
IDENTIFICATION OF PHYTOPLANKTON
360,000 CELLS/ML

	_ORGANISM__NAME______________	_COMMON__NAME______	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
L	....ANKISTRODESMUS			0
	...SCENEDESMACEAE			
	....CRUCIGENIA		2,100	1
	....SCENEDESMUS		2,500	1
	..VOLVOCALES			
	...CHLAMYDOMONADACEAE			
L	....CHLAMYDOMONAS			0
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..PENNALES	PENNATE		
	...NITZSCHIACEAE			
L	....NITZSCHIA			0
	.CHRYSOPHYCEAE	YELLOW-BROWN ALGAE		
	..CHRYSOMONADALES			
	...OCHROMONADACEAE			
	....DINOBRYON		2,000	1
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..CHROOCOCCALES	COCCOID		
	...CHROOCOCCACEAE			
	....ANACYSTIS		14,000	4
	..OSCILLATORIALES	FILAMENTOUS		
	...OSCILLATORIACEAE			
D	....LYNGBYA		150,000	43
D	....OSCILLATORIA		170,000	48
	....PHORMIDIUM		11,000	3
	EUGLENOPHYTA	EUGLENOIDS		
	.EUGLENOPHYCEAE			
	..EUGLENALES			
	...EUGLENACEAE			
L	....TRACHELOMONAS			0

NOTE: D = DOMINANT ORGANISM, GREATER OR EQUAL TO 15%
L = LESS THAN 1/2% MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.183
CLASS 0.186
ORDER 0.419
FAMILY 0.433
GENERA 1.543

MISCELLANEOUS ANALYSES OF LAKES IN MINNESOTA

445141093060303 HORNBEAM LAKE AT INVER GROVE HEIGHTS, MINN.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

JUNE 27, 1975
1130 HOURS

IDENTIFICATION OF PHYTOPLANKTON

280,000 CELLS/ML

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  _ORGANISM__NAME_____________    _COMMON__NAME______  CELLS/ML     PER_CENT
  CHLOROPHYTA                     GREEN ALGAE
  .CHLOROPHYCEAE
  ..CHLOROCOCCALES
  ...HYDRODICTYACEAE
L ....PEDIASTRUM                                                        0
  ...MICRACTINIACEAE
L ....MICRACTINIUM                                                      0
  ...OOCYSTACEAE
  ....ANKISTRODESMUS                                    2,900           1
L ....TETRAEDRON                                                        0
  ...SCENEDESMACEAE
L ....CRUCIGENIA                                                        0
  ....SCENEDESMUS                                       6,400           2
  CHRYSOPHYTA
  .BACILLARIOPHYCEAE              DIATOMS
  ..CENTRALES                     CENTRIC
  ...COSCINODISCACEAE
  ....MELOSIRA                                          2,300           1
  ..PENNALES                      PENNATE
  ...NITZSCHIACEAE
  ....NITZSCHIA                                         2,500           1
  .CHRYSOPHYCEAE                  YELLOW-BROWN ALGAE
  ..CHRYSOMONADALES
  ...OCHROMONADACEAE
L ....DINOBRYON                                                         0
  CYANOPHYTA                      BLUE-GREEN ALGAE
  .MYXOPHYCEAE
  ..CHROOCOCCALES                 COCCOID
  ...CHROOCOCCACEAE
  ....AGMENELLUM                                        1,700           1
  ....ANACYSTIS                                         9,700           4
  ..OSCILLATORIALES               FILAMENTOUS
  ...NOSTOCACEAE
  ....ANABAENA                                         15,000           5
  ....APHANIZOMENON                                     2,100           1
  ...OSCILLATORIACEAE
D ....OSCILLATORIA                                    230,000          84
  EUGLENOPHYTA                    EUGLENOIDS
  .EUGLENOPHYCEAE
  ..EUGLENALES
  ...EUGLENACEAE
L ....TRACHELOMONAS                                                     0
  PYRRHOPHYTA
  .DINOPHYCEAE                    DINOFLAGELLATES
  ..PERIDINIALES
  ...CERATIACEAE
L ....CERATIUM                                                          0
  ...GLENODINIACEAE
L ....GLENODINIUM                                                       0
L UNKNOWN 218010101002000                                               0

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
      L - LESS THEN 1%: MAY NOT HAVE BEEN ACTUALLY COUNTED
      ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
      DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
                          PHYL/DIV 0.393
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445146093060902 HORNBEAM LAKE AT INVER GROVE HEIGHTS, MINN.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPERATURE (DEG C) (00020)	TEMPERATURE (DEG C) (00010)	DISSOLVED OXYGEN (MG/L) (00300)	PERCENT SATURATION (00301)	CARBON DIOXIDE (CO2) (MG/L) (00405)	PH (UNITS) (00400)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L) (70300)	DISSOLVED SOLIDS (TONS PER AC-FT) (70303)
FEB. 04...	1120	-3.0	1.0	1.2	8	11	7.4	280	166	.23
JUNE 27...	1100	28.0	26.5	7.6	96	.4	8.6	181	118	.16

DATE	SUSPENDED SOLIDS (MG/L) (70299)	TURBIDITY (JTU) (00070)	DISSOLVED CALCIUM (CA) (MG/L) (00915)	DISSOLVED SODIUM (NA) (MG/L) (00930)	ALKALINITY AS CACO3 (MG/L) (00410)	DISSOLVED CHLORIDE (CL) (MG/L) (00940)	TOTAL KJELDAHL NITROGEN (N) (MG/L) (00625)	SUSPENDED KJEL. NITROGEN (N) (MG/L) (00624)	DISSOLVED KJEL. NITROGEN (N) (MG/L) (00623)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)
FEB. 04...	3	5	40	4.7	135	5.3	2.8	1.0	1.8	.05
JUNE 27...	20	3	25	4.0	82	3.6	1.3	.49	.81	.01

DATE	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	TOTAL NITROGEN (N) (MG/L) (00600)	TOTAL PHOSPHORUS (P) (MG/L) (00665)	DISSOLVED PHOSPHORUS (P) (MG/L) (00666)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)	DISSOLVED SILICA (SIO2) (MG/L) (00955)	FECAL COLIFORM (COL. PER 100 ML) (31616)	STREPTOCOCCI (COLONIES PER 100 ML) (31679)	TOTAL NITROGEN (NO3) (MG/L) (71887)	TOTAL ALUMINUM IN BOTTOM MATERIAL (UG/G) (01108)
FEB. 04...	.05	2.8	.07	.00	14	1.2	2	0	13	13000
JUNE 27...	.00	1.3	.06	.01	9.5	.5	--	--	5.8	--

DATE	TOTAL ARSENIC IN BOTTOM MATERIAL (UG/G) (01003)	TOTAL CADMIUM IN BOTTOM MATERIAL (UG/G) (01028)	ORGANIC CARBON IN BOTTOM MATERIAL (C) (G/KG) (00687)	TOTAL CHROMIUM IN BOTTOM MATERIAL (UG/G) (01029)	TOTAL COPPER IN BOTTOM MATERIAL (UG/G) (01043)	TOTAL LEAD IN BOTTOM MATERIAL (UG/G) (01052)	TOTAL MERCURY IN BOTTOM MATERIAL (UG/G) (71921)	TOTAL NITROGEN IN BOTTOM MATERIAL (N) (MG/KG) (00603)	TOTAL PHOSPHORUS IN BOTTOM MATERIAL (MG/KG) (00668)	TOTAL ZINC IN BOTTOM MATERIAL (UG/G) (01093)
FEB. 04...	5	1	40	14	37	50	.0	7000	140	69
JUNE 27...	--	--	--	--	--	--	--	--	--	--

FEB. 4, 1975
1120 HOURS

IDENTIFICATION OF PHYTOPLANKTON

450,000 CELLS/ML

	ORGANISM NAME	COMMON NAME	CELLS/ML	PER CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
L	....ANKISTRODESMUS			0
L	....KIRCHNERIELLA			0
	...SCENEDESMACEAE			
L	....SCENEDESMUS			0
	CHRYSOPHYTA			
	.CHRYSOPHYCEAE	YELLOW-BROWN ALGAE		
	..CHRYSOMONADALES			
	...OCHROMONADACEAE			
	....DINOBRYON		3,900	1
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..CHROOCOCCALES	COCCOID		
	...CHROOCOCCACEAE			
	....ANACYSTIS		47,000	11
	....GOMPHOSPHAERIA		5,400	1
	..OSCILLATORIALES	FILAMENTOUS		
	...OSCILLATORIACEAE			
D	....LYNGBYA		210,000	46
D	....OSCILLATORIA		180,000	41
	EUGLENOPHYTA	EUGLENOIDS		
	.EUGLENOPHYCEAE			
	..EUGLENALES			
	...EUGLENACEAE			
L	....PHACUS			0
L	....TRACHELOMONAS			0

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
L - LESS THEN 1%: MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.100
CLASS 0.100
ORDER 0.621
FAMILY 0.623
GENERA 1.549

MISCELLANEOUS ANALYSES OF LAKES IN MINNESOTA

445152093061301 HORNBEAM LAKE AT INVER GROVE HEIGHTS, MINN.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPERATURE (DEG C) (00020)	TEMPERATURE (DEG C) (00010)	DISSOLVED OXYGEN (MG/L) (00300)	PERCENT SATURATION (00301)	CARBON DIOXIDE (CO2) (MG/L) (00405)	PH (UNITS) (00400)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L) (70300)	DISSOLVED SOLIDS (TONS PER AC-FT) (70303)
FEB. 04...	1200	-3.0	1.0	1.1	8	13	7.3	285	223	.30
JUNE 27...	1030	28.0	26.0	7.9	98	.6	8.4	184	120	.16

DATE	SUSPENDED SOLIDS (MG/L) (70299)	TURBIDITY (JTU) (00070)	DISSOLVED CALCIUM (CA) (MG/L) (00915)	DISSOLVED SODIUM (NA) (MG/L) (00930)	ALKALINITY AS CACO3 (MG/L) (00410)	DISSOLVED CHLORIDE (CL) (MG/L) (00940)	TOTAL KJELDAHL NITROGEN (N) (MG/L) (00625)	SUSPENDED KJEL. NITROGEN (N) (MG/L) (00624)	DISSOLVED KJEL. NITROGEN (N) (MG/L) (00623)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)
FEB. 04...	11	4	31	5.0	134	5.0	2.5	.50	2.0	.06
JUNE 27...	0	5	21	3.9	83	4.0	1.5	.72	.78	.00

DATE	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	TOTAL NITROGEN (N) (MG/L) (00600)	TOTAL PHOSPHORUS (P) (MG/L) (00665)	DISSOLVED PHOSPHORUS (P) (MG/L) (00666)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)	DISSOLVED SILICA (SIO2) (MG/L) (00955)	FECAL COLIFORM (COL. PER 100 ML) (31616)	STREPTOCOCCI (COLONIES PER 100 ML) (31679)	TOTAL NITROGEN (NO3) (MG/L) (71887)	TOTAL ALUMINUM IN BOTTOM MATERIAL (UG/G) (01108)
FEB. 04...	.06	2.6	.07	.03	14	1.2	0	0	11	14000
JUNE 27...	.00	1.5	.07	.01	14	.5	--	--	6.6	--

DATE	TOTAL ARSENIC IN BOTTOM MATERIAL (UG/G) (01003)	TOTAL CADMIUM IN BOTTOM MATERIAL (UG/G) (01028)	ORGANIC CARBON IN BOTTOM MATERIAL (C) (G/KG) (00687)	TOTAL CHROMIUM IN BOTTOM MATERIAL (UG/G) (01029)	TOTAL COPPER IN BOTTOM MATERIAL (UG/G) (01043)	TOTAL LEAD IN BOTTOM MATERIAL (UG/G) (01052)	TOTAL MERCURY IN BOTTOM MATERIAL (UG/G) (71921)	TOTAL NITROGEN IN BOTTOM MATERIAL (N) (MG/KG) (00603)	TOTAL PHOSPHORUS IN BOTTOM MATERIAL (MG/KG) (00668)	TOTAL ZINC IN BOTTOM MATERIAL (UG/G) (01093)
FEB. 04...	5	1	41	11	65	90	.0	6000	140	58
JUNE 27...	--	--	--	--	--	--	--	--	--	--

FEB. 04, 1975
1200 HOURS

IDENTIFICATION OF PHYTOPLANKTON

240,000 CELLS/ML

	ORGANISM NAME	COMMON NAME	CELLS/ML	PER CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
L	....ANKISTRODESMUS			0
	...SCENEDESMACEAE			
	....SCENEDESMUS		1,400	1
	CHRYSOPHYTA			
	.CHRYSOPHYCEAE	YELLOW-BROWN ALGAE		
	..CHRYSOMONADALES			
	...OCHROMONADACEAE			
L	....DINOBRYON			0
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..CHROOCOCCALES	COCCOID		
	...CHROOCOCCACEAE			
	....ANACYSTIS		12,000	5
	..OSCILLATORIALES	FILAMENTOUS		
	...OSCILLATORIACEAE			
D	....LYNGBYA		100,000	42
D	....OSCILLATORIA		110,000	46
	....PHORMIDIUM		19,000	8

NOTE: D = DOMINANT ORGANISM, GREATER OR EQUAL TO 15%
L = LESS THAN 1%, MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER, 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.108
CLASS 0.108
ORDER 0.386
FAMILY 0.393
GENERA 1.583

445152093061301 HORNBEAM LAKE AT INVER GROVE HEIGHTS, MINN.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

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                            JUNE 27, 1975
                             1030 HOURS

                   IDENTIFICATION OF PHYTOPLANKTON

                           78,000 CELLS/ML

   _ORGANISM__NAME_____________   _COMMON__NAME______  CELLS/ML      PER_CENT

   CHLOROPHYTA                    GREEN ALGAE
   .CHLOROPHYCEAE
   ..CHLOROCOCCALES
   ...COELASTRACEAE
   ....COFLASTRUM                                        1,500           2
   ...MICRACTINIACEAE
   ....MICRACTINIUM                                      1,200           1
   ...OCCYSTACEAE
   ....ANKISTRODESMUS                                    1,700           2
 L ....KIRCHNERIELLA                                                     0
   ....SELENASTRUM                                         580           1
   ....TETRAEDRON                                          870           1
   ...SCENEDESMACEAE
 L ....CRUCIGENIA                                                        0
   ....SCENEDESMUS                                       2,700           3
   ..ZYGNEMATALES
   ...DESMIDIACEAE                PLACODERM DESMIDS
 L ....STAURASTRUM                                                       0
   CHRYSOPHYTA
   .BACILLARIOPHYCEAE             DIATOMS
   ..CENTRALES                    CENTRIC
   ...COSCINODISCACEAE
   ....MELOSIRA                                          1,700           2
   ..PENNALES                     PENNATE
   ...FRAGILARIACEAE
 L ....SYNEDRA                                                           0
   .CHRYSOPHYCEAE                 YELLOW-BROWN ALGAE
   ..CHRYSOMONADALES
   ...OCHROMONADACEAE
   ....DINOBRYON                                         1,100           1
 L ....UROGLENA                                                          0
   CYANOPHYTA                     BLUE-GREEN ALGAE
   .MYXOPHYCEAE
   ..CHROOCOCCALES                COCCOID
   ...CHROOCOCCACEAE
   ....AGMENELLUM                                        4,600           6
 D ....ANACYSTIS                                        49,000          63
   ....GOMPHOSPHAERIA                                    9,700          12
   ..OSCILLATORIALES              FILAMENTOUS
   ...OSCILLATORIACEAE
   ....OSCILLATORIA                                        970           1
   EUGLENOPHYTA                   EUGLENOIDS
   .CRYPTOPHYCEAE                 CRYPTOMONADS
   ..CRYPTOMONIDALES
   ...CRYPTOMONODACEAE
 L ....CRYPTOMONAS                                                       0
   .EUGLENOPHYCEAE
   ..EUGLENALES
   ...EUGLENACEAE
 L ....EUGLENA                                                           0
 L ....TRACHELOMONAS                                                     0
   PYRRHOPHYTA
   .DINOPHYCEAE                   DINOFLAGELLATES
   ..PERIDINIALES
   ...GLENODINIACEAE
 L ....GLENODINIUM                                                       0
   ...PERIDINIACEAE
 L ....PERIDINIUM                                                        0


 NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
       L - LESS THEN 10% MAY NOT HAVE BEEN ACTUALLY COUNTED
       ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
       DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
                          PHYL/DIV 0.846
                             CLASS 0.892
                             ORDER 1.002
                            FAMILY 1.228
                            GENERA 2.145
```

MISCELLANEOUS ANALYSES OF LAKES IN MINNESOTA

445146093051401 HORSESHOE LAKE AT INVER GROVE HEIGHTS, MINN.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

JAN. 30, 1975
1010 HOURS

IDENTIFICATION OF PHYTOPLANKTON

18,000 CELLS/ML

	ORGANISM NAME	COMMON NAME	CELLS/ML	PER CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
	....ANKISTRODESMUS		260	1
	...SCENEDESMACEAE			
	....SCENEDESMUS		220	1
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..PENNALES	PENNATE		
	...NITZSCHIACEAE			
L	....NITZSCHIA			0
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..CHROOCOCCALES	COCCOID		
	...CHROOCOCCACEAE			
	....AGMENELLUM		1,600	8
D	....ANACYSTIS		10,000	55
	....GOMPHOSPHAERIA		1,400	7
	..OSCILLATORIALES	FILAMENTOUS		
	...OSCILLATORIACEAE			
D	....LYNGBYA		4,800	26
	EUGLENOPHYTA	EUGLENOIDS		
	.EUGLENOPHYCEAE			
	..EUGLENALES			
	...EUGLENACEAE			
	....EUGLENA		130	1

NOTE: D = DOMINANT ORGANISM, GREATER OR EQUAL TO 15%
L = LESS THAN 1%, MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER, 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYLUM [illegible]
CLASS [illegible]
ORDER 1.062
FAMILY 1.047
GENERA 1.744

DATE	TIME	AIR TEMPERATURE (DEG C) (00020)	TEMPERATURE (DEG C) (00010)	DISSOLVED OXYGEN (MG/L) (00300)	PER-CENT SATURATION (00301)	CARBON DIOXIDE (CO2) (MG/L) (00405)	PH (UNITS) (00400)	SPECIFIC CONDUCTANCE (MICRO-MHOS) (00095)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L) (70300)	DISSOLVED SOLIDS (TONS PER AC-FT) (70303)
FEB. 05...	1010	-5.0	1.0	.8	6	9.0	7.0	330	191	.26
JUNE 26...	1000	28.0	26.0	10.9	136	.1	9.2	220	146	.20

DATE	SUSPENDED SOLIDS (MG/L) (70299)	TURBIDITY (JTU) (00070)	DISSOLVED CALCIUM (CA) (MG/L) (00915)	DISSOLVED SODIUM (NA) (MG/L) (00930)	ALKALINITY AS CACO3 (MG/L) (00410)	DISSOLVED CHLORIDE (CL) (MG/L) (00940)	TOTAL KJELDAHL NITROGEN (N) (MG/L) (00625)	SUSPENDED KJEL. NITROGEN (N) (MG/L) (00624)	DISSOLVED KJEL. NITROGEN (N) (MG/L) (00623)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)
FEB. 05...	8	3	38	6.8	117	23	2.5	.40	2.1	.23
JUNE 26...	20	5	27	8.0	80	17	1.2	.46	.76	.01

445146093051401 HORSESHOE LAKE AT INVER GROVE HEIGHTS, MINN.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	TOTAL NITRO-GEN (N) (MG/L) (00600)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOL-VED PHOS-PHORUS (P) (MG/L) (00666)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	FECAL COLI-FORM (COL. PER 100 ML) (31616)	STREP-TOCOCCI (COL-ONIES PER 100 ML) (31679)	TOTAL NITRO-GEN (NO3) (MG/L) (71887)	TOTAL ALUMI-NUM IN BOTTOM MA-TERIAL (UG/G) (01108)
FEB. 03...	.01	2.7	.12	.06	17	1.2	0	0	12	38000
JUNE 26...	.01	1.2	.06	.01	10	1.0	--	--	5.6	--

DATE	TOTAL ARSENIC IN BOTTOM MA-TERIAL (UG/G) (01003)	TOTAL CADMIUM IN BOTTOM MA-TERIAL (UG/G) (01028)	ORGANIC CARBON IN BOT-TOM MA-TERIAL (C) (G/KG) (00687)	TOTAL CHRO-MIUM IN BOTTOM MA-TERIAL (UG/G) (01029)	TOTAL COPPER IN BOTTOM MA-TERIAL (UG/G) (01043)	TOTAL LEAD IN BOTTOM MA-TERIAL (UG/G) (01052)	TOTAL MERCURY IN BOTTOM MA-TERIAL (UG/G) (71921)	TOTAL NITRO-GEN IN BOTTOM MATERI-AL (N) (MG/KG) (00605)	TOTAL PHOS-PHORUS IN BOT-TOM MA-TERIAL (MG/KG) (00668)	TOTAL ZINC IN BOTTOM MA-TERIAL (UG/G) (01093)
FEB. 03...	8	2	50	19	29	70	.0	8000	77	85
JUNE 26...	--	--	--	--	--	--	--	--	--	--

JUNE 26, 1975
1000 HOURS

IDENTIFICATION OF PHYTOPLANKTON

91,000 CELLS/ML

	ORGANISM NAME	COMMON NAME	CELLS/ML	PER CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...MICRACTINIACEAE			
	....MICRACTINIUM		720	1
	...OOCYSTACEAE			
	....ANKISTRODESMUS		1,700	2
	....CHODATELLA		520	1
	....DICTYOSPHAERIUM		2,500	3
L	....KIRCHNERIELLA			0
	....TETRAEDRON		1,100	1
	...SCENEDESMACEAE			
	....SCENEDESMUS		1,700	2
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..PENNALES	PENNATE		
	...FRAGILARIACEAE			
L	....SYNEDRA			0
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..CHROOCOCCALES	COCCOID		
	...CHROOCOCCACEAE			
	....ANACYSTIS		8,500	9
	..OSCILLATORIALES	FILAMENTOUS		
	...NOSTOCACEAE			
	....ANABAENA		5,000	5
D	....APHANIZOMENON		68,000	74
	EUGLENOPHYTA	EUGLENOIDS		
	.EUGLENOPHYCEAE			
	..EUGLENALES			
	...EUGLENACEAE			
	....EUGLENA		520	1
L	....PHACUS			0
L	....TRACHELOMONAS			0
	PYRRHOPHYTA			
	.DINOPHYCEAE	DINOFLAGELLATES		
	..PERIDINIALES			
	...CERATIACEAE			
L	....CERATIUM			0
	...GLENODINIACEAE			
L	....GLENODINIUM			0

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
L - LESS THEN 1%: MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.619
CLASS 0.619
ORDER 1.047
FAMILY 1.156
GENERA 1.591

MISCELLANEOUS ANALYSES OF LAKES IN MINNESOTA

445147093050703 HORSESHOE LAKE AT INVER GROVE HEIGHTS, MINN.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPER- ATURE (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	DIS- SOLVED OXYGEN (MG/L) (00300)	PER- CENT SATUR- ATION (00301)	CARBON DIOXIDE (CO2) (MG/L) (00405)	PH (UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303)
FEB. 03...	1130	-5,0	1,0	,8	6	11	7,3	315	189	,26
JUNE 26...	1100	28,0	26,0	10,2	128	,1	9,1	227	139	,19

DATE	SUS- PENDED SOLIDS (MG/L) (70299)	TUR- BID- ITY (JTU) (00070)	DIS- SOLVED CAL- CIUM (CA) (MG/L) (00915)	DIS- SOLVED SODIUM (NA) (MG/L) (00930)	ALKA- LINITY AS CACO3 (MG/L) (00410)	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625)	SUS- PENDED KJEL. NITRO- GEN (N) (MG/L) (00624)	DIS- SOLVED KJEL. NITRO- GEN (N) (MG/L) (00623)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)
FEB. 03...	7	3	37	8,9	117	24	2,6	,90	1,7	,20
JUNE 26...	12	3	18	7,9	78	17	1,4	,64	,76	,01

FEB. 3. 1975
1130 HOURS

IDENTIFICATION OF PHYTOPLANKTON

27.000 CELLS/ML

	ORGANISM NAME	COMMON NAME	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
L	....ANKISTRODESMUS			0
L	....CHODATELLA			0
L	....KIRCHNERIELLA			0
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..PENNALES	PENNATE		
	...FRAGILARIACEAE			
L	....SYNEDRA			0
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..CHROOCOCCALES	COCCOID		
	...CHROOCOCCACEAE			
D	....AGMENELLUM		6.400	24
D	....ANACYSTIS		17.000	64
	..OSCILLATORIALES	FILAMENTOUS		
	...OSCILLATORIACEAE			
	....LYNGBYA		2.700	10
	EUGLENOPHYTA	EUGLENOIDS		
	.CRYPTOPHYCEAE	CRYPTOMONADS		
	..CRYPTOMONADALES			
	...CRYPTOMONADACEAE			
L	....CRYPTOMONAS			0
	.EUGLENOPHYCEAE			
	..EUGLENALES			
	...EUGLENACEAE			
L	....EUGLENA			0
L	....PHACUS			0
L	....TRACHELOMONAS			0

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
L - LESS THEN 1%: MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0,167
CLASS 0,179
ORDER 0,669
FAMILY 0,669
GENERA 1,416

MISCELLANEOUS ANALYSES OF LAKES IN MINNESOTA

445147093050703 HORSESHOE LAKE AT INVER GROVE HEIGHTS, MINN.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	TOTAL NITRO-GEN (N) (MG/L) (00600)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOL-VED PHOS-PHORUS (P) (MG/L) (00666)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	FECAL COLI-FORM (COL. PER 100 ML) (31616)	STREP-TOCOCCI (COL-ONIES PER 100 ML) (31679)	TOTAL NITRO-GEN (NO3) (MG/L) (71887)	TOTAL ALUMI-NUM IN BOTTOM MA-TERIAL (UG/G) (01108)
FEB. 03...	.02	2.8	.08	.02	11	1.3	0	0	12	15000
JUNE 26...	.00	1.4	.08	.01	9.1	1.1	--	--	6.2	--

DATE	TOTAL ARSENIC IN BOTTOM MA-TERIAL (UG/G) (01003)	TOTAL CADMIUM IN BOTTOM MA-TERIAL (UG/G) (01028)	ORGANIC CARBON IN BOT-TOM MA-TERIAL (C) (G/KG) (00687)	TOTAL CHRO-MIUM IN BOTTOM MA-TERIAL (UG/G) (01029)	TOTAL COPPER IN BOTTOM MA-TERIAL (UG/G) (01043)	TOTAL LEAD IN BOTTOM MA-TERIAL (UG/G) (01052)	TOTAL MERCURY IN BOTTOM MA-TERIAL (UG/G) (71921)	TOTAL NITRO-GEN IN BOTTOM MATERI-AL (N) (MG/KG) (00603)	TOTAL PHOS-PHORUS IN BOT-TOM MA-TERIAL (MG/KG) (00668)	TOTAL ZINC IN BOTTOM MA-TERIAL (UG/G) (01093)
FEB. 03...	10	2	54	16	26	50	.0	13000	110	118
JUNE 26...	--	--	--	--	--	--	--	--	--	--

JUNE 26. 1975
1100 HOURS

IDENTIFICATION OF PHYTOPLANKTON

160.000 CELLS/ML

_ORGANISM__NAME______________	_COMMON__NAME______	CELLS/ML	PER_CENT
CHLOROPHYTA	GREEN ALGAE		
.CHLOROPHYCEAE			
..CHLOROCOCCALES			
...OOCYSTACEAE			
L ....ANKISTRODESMUS			0
L ....TETRAEDRON			0
...SCENEDESMACEAE			
....SCENEDESMUS		4.600	3
CYANOPHYTA	BLUE-GREEN ALGAE		
.MYXOPHYCEAE			
..OSCILLATORIALES	FILAMENTOUS		
...NOSTOCACEAE			
D ....APHANIZOMENON		144.000	90
...OSCILLATORIACEAE			
....LYNGBYA		6.100	4
EUGLENOPHYTA	EUGLENOIDS		
.CRYPTOPHYCEAE	CRYPTOMONADS		
..CRYPTOMONIDALES			
...CRYPTOMONODACEAE			
....CRYPTOMONAS		4.600	3

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
L - LESS THEN 1%: MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER . 200-X MICROSCOPE
DIVERSITY INDICES. BASED ON ACTUAL COUNTS:
PHYL/DIV 0.416
CLASS 0.416
ORDER 0.416
FAMILY 0.675
GENERA 0.684

445151093051202 HORSESHOE LAKE AT INVER GROVE HEIGHTS, MINN.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPER-ATURE (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	DIS-SOLVED OXYGEN (MG/L) (00300)	PER-CENT SATUR-ATION (00301)	CARBON DIOXIDE (CO2) (MG/L) (00405)	PH (UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)
FEB., 03...	1045	-5.0	1.0	.6	4	12	7.3	320	191	.26
JUNE 26...	1030	28.0	26.0	10.5	131	.2	8.9	235	146	.20

DATE	SUS-PENDED SOLIDS (MG/L) (70299)	TUR-BID-ITY (JTU) (00070)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	ALKA-LINITY AS CACO3 (MG/L) (00410)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L) (00625)	SUS-PENDED KJEL. NITRO-GEN (N) (MG/L) (00626)	DIS-SOLVED KJEL. NITRO-GEN (N) (MG/L) (00623)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)
FEB., 03...	6	3	43	8.6	118	25	1.9	.40	1.5	.21
JUNE 26...	16	3	31	8.0	81	17	1.3	.20	1.1	.01

FEB., 03, 1975
1045 HOURS

IDENTIFICATION OF PHYTOPLANKTON

34,000 CELLS/ML

	ORGANISM NAME	COMMON NAME	CELLS/ML	PER CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
L	....ANKISTRODESMUS			0
	...SCENEDESMACEAE			
L	....TETRASTRUM			0
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..PENNALES	PENNATE		
	...FRAGILARIACEAE			
L	....SYNEDRA			0
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..CHROOCOCCALES	COCCOID		
	...CHROOCOCCACEAE			
	....AGMENELLUM		3,100	9
D	....ANACYSTIS		23,000	68
D	....GOMPHOSPHAERIA		5,700	17
	..OSCILLATORIALES	FILAMENTOUS		
	...OSCILLATORIACEAE			
	....LYNGBYA		1,500	5
	EUGLENOPHYTA	EUGLENOIDS		
	.EUGLENOPHYCEAE			
	..EUGLENALES			
	...EUGLENACEAE			
L	....EUGLENA			0
L	....TRACHELOMONAS			0

NOTE: D - DOMINANT ORGANISM, GREATER OR EQUAL TO 15%
L - LESS THAN 1/2% MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER, 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYLUM 0.107
CLASS 0.107
ORDER 0.375
FAMILY 0.377
GENERA 1.427

MISCELLANEOUS ANALYSES OF LAKES IN MINNESOTA

445151093051202 HORSESHOE LAKE AT INVER GROVE HEIGHTS, MINN.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	TOTAL NITRO-GEN (N) (MG/L) (00600)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOL-VED PHOS-PHORUS (P) (MG/L) (00666)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	FECAL COLI-FORM (COL. PER 100 ML) (31616)	STREP-TOCOCCI (COL-ONIES PER 100 ML) (31679)	TOTAL NITRO-GEN (NO3) (MG/L) (71887)	TOTAL ALUMI-NUM IN BOTTOM MA-TERIAL (UG/G) (01108)
FEB. 03...	.01	2.1	.10	.02	41	1.5	0	0	9.3	13000
JUNE 26...	.00	1.3	.04	.01	4.9	1.0	--	--	5.8	--

DATE	TOTAL ARSENIC IN BOTTOM MA-TERIAL (UG/G) (01003)	TOTAL CADMIUM IN BOTTOM MA-TERIAL (UG/G) (01028)	ORGANIC CARBON IN BOT-TOM MA-TERIAL (C) (G/KG) (00687)	TOTAL CHRO-MIUM IN BOTTOM MA-TERIAL (UG/G) (01029)	TOTAL COPPER IN BOTTOM MA-TERIAL (UG/G) (01043)	TOTAL LEAD IN BOTTOM MA-TERIAL (UG/G) (01052)	TOTAL MERCURY IN BOTTOM MA-TERIAL (UG/G) (71921)	TOTAL NITRO-GEN IN BOTTOM MATERI-AL (N) (MG/KG) (00603)	TOTAL PHOS-PHORUS IN BOT-TOM MA-TERIAL (MG/KG) (00668)	TOTAL ZINC IN BOTTOM MA-TERIAL (UG/G) (01093)
FEB. 03...	15	2	71	16	35	90	.1	11000	68	98
JUNE 26...	--	--	--	--	--	--	--	--	--	--

JUNE 26, 1975
1030 HOURS

IDENTIFICATION OF PHYTOPLANKTON

120,000 CELLS/ML

	_ORGANISM__NAME______________	_COMMON__NAME______	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
	....ANKISTRODESMUS		880	1
L	....TETRAEDRON			0
	...SCENEDESMACEAE			
	....CRUCIGENIA		1,200	1
	....SCENEDESMUS		1,200	1
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..PENNALES	PENNATE		
	...NITZSCHIACEAE			
L	....NITZSCHIA			0
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..CHROOCOCCALES	COCCOID		
	...CHROOCOCCACEAE			
D	....AGMENELLUM		25,000	21
D	....ANACYSTIS		21,000	18
	....GOMPHOSPHAERIA		2,000	2
	..OSCILLATORIALES	FILAMENTOUS		
	...NOSTOCACEAE			
	....ANABAENA		2,000	2
D	....APHANIZOMENON		58,000	50
	...OSCILLATORIACEAE			
	....OSCILLATORIA		3,400	3
	EUGLENOPHYTA	EUGLENOIDS		
	.EUGLENOPHYCEAE			
	..EUGLENALES			
	...EUGLENACEAE			
L	....EUGLENA			0
L	....PHACUS			0
L	....TRACHELOMONAS			0

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
L - LESS THEN 1%: MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.271
CLASS 0.271
ORDER 1.218
FAMILY 1.408
GENERA 2.049

MISCELLANEOUS ANALYSES OF LAKES IN MINNESOTA

444540093094700 JENSEN LAKE AT EAGAN VILLAGE, MINN
LAT 44-45-40 LONG 093-09-47 SEQ 00

OCT. 17, 1974
1300 HOURS

IDENTIFICATION OF PHYTOPLANKTON

9,400 CELLS/ML

	_ORGANISM__NAME_______________	_COMMON__NAME______	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
	....ANKISTRODESMUS		48	1
D	....DICTYOSPHAERIUM		2,600	27
	....OOCYSTIS		190	2
	....QUADRIGULA		48	1
	....TETRAEDRON		120	1
	...SCENEDESMACEAE			
	....CRUCIGENIA		1,000	11
	....SCENEDESMUS		570	6
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
	....CYCLOTELLA		48	1
	..PENNALES	PENNATE		
	...FRAGILARIACEAE			
	....SYNEDRA		95	1
	.CHRYSOPHYCEAE	YELLOW-BROWN ALGAE		
	..CHRYSOMONADALES			
	...OCHROMONADACEAE			
	....DINOBRYON		330	4
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..CHROOCOCCALES	COCCOID		
	...CHROOCOCCACEAE			
D	....ANACYSTIS		4,300	45
	EUGLENOPHYTA	EUGLENOIDS		
	.CRYPTOPHYCEAE	CRYPTOMONADS		
	..CRYPTOMONADALES			
	...CRYPTOMONADACEAE			
L	....CRYPTOMONAS			0
	.EUGLENOPHYCEAE			
	..EUGLENALES			
	...EUGLENACEAE			
L	....PHACUS			0

NOTE: D = DOMINANT ORGANISM, GREATER OR EQUAL TO 15%
L = LESS THAN 1%, MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 1.278
CLASS 1.328
ORDER 1.342
FAMILY 1.801
GENERA 2.220

444730093065200 LAKESIDE ESTATE LAKE AT EAGAN VILLAGE, MINN
LAT 44-47-30 LONG 093-06-52 SEQ 00

OCT. 23, 1974
1300 HOURS

IDENTIFICATION OF PHYTOPLANKTON

450,000 CELLS/ML

	_ORGANISM__NAME_______________	_COMMON__NAME_______	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
L	....ANKISTRODESMUS			0
L	....KIRCHNERIELLA			0
	....TETRAEDRON		2,700	1
	...SCENEDESMACEAE			
	....SCENEDESMUS		14,000	3
	..VOLVOCALES			
	...CHLAMYDOMONADACEAE			
L	....CHLAMYDOMONAS			0
	..ZYGNEMATALES			
	...DESMIDIACEAE	PLACODERM DESMIDS		
L	....STAURASTRUM			0
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..PENNALES	PENNATE		
	...NITZSCHIACEAE			
	....NITZSCHIA		5,500	1
	.CHRYSOPHYCEAE	YELLOW-BROWN ALGAE		
	..CHRYSOMONADALES			
	...OCHROMONADACEAE			
	....OCHROMONAS		8,900	2
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..CHROOCOCCALES	COCCOID		
	...CHROOCOCCACEAE			
D	....ANACYSTIS		80,000	18
	..OSCILLATORIALES	FILAMENTOUS		
	...NOSTOCACEAE			
	....ANABAENA		46,000	10
	...OSCILLATORIACEAE			
D	....LYNGBYA		290,000	64
	EUGLENOPHYTA	EUGLENOIDS		
	.EUGLENOPHYCEAE			
	..EUGLENALES			
	...EUGLENACEAE			
L	....EUGLENA			0
L	....TRACHELOMONAS			0
	PYRRHOPHYTA			
	.DINOPHYCEAE	DINOFLAGELLATES		
	..PERIDINIALES			
	...GLENODINIACEAE			
L	....GLENODINIUM			0

NOTE: D - DOMINANT ORGANISM, GREATER OR EQUAL TO 15%
L - LESS THAN 1%, MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.522
CLASS 0.545
ORDER 1.221
FAMILY 1.640
GENERA 1.714

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                      MISCELLANEOUS ANALYSES OF LAKES IN MINNESOTA

           444738093065200  LAKESIDE ESTATE LAKE AT EAGAN VILLAGE, MINN
                      LAT 44-47-38   LONG 093-06-52   SEQ 00

                                  JUNE 18, 1975
                                   1300 HOURS

                          IDENTIFICATION OF PHYTOPLANKTON

                                 27,000 CELLS/ML

    _ORGANISM__NAME______________   _COMMON__NAME______  CELLS/ML       PER_CENT

    CHLOROPHYTA                     GREEN ALGAE
    .CHLOROPHYCEAE
    ..CHLOROCOCCALES
    ...OOCYSTACEAE
    ....ANKISTRODESMUS                                      140            1
    ....DICTYOSPHAERIUM                                     580            2
    ....KIRCHNERIELLA                                       140            1
    ....OOCYSTIS                                            580            2
    ....TETRAEDRON                                          140            1
    ...SCENEDESMACEAE
    ....SCENEDESMUS                                       1,400            5
    ..VOLVOCALES
    ...CHLAMYDOMONADACEAE
    ....CHLAMYDOMONAS                                       140            1
    ...POLYBLEPHARIDACEAE
    ....PYRAMIMONAS                                         290            1
    CHRYSOPHYTA
    .BACILLARIOPHYCEAE              DIATOMS
    ..PENNALES                      PENNATE
    ...NITZSCHIACEAE
    ....NITZSCHIA                                           140            1
    CYANOPHYTA                      BLUE-GREEN ALGAE
    .MYXOPHYCEAE
    ..CHROOCOCCALES                 COCCOID
    ...CHROOCOCCACEAE
  D ....ANACYSTIS                                         6,500           24
  D ....ANACYSTIS                                        17,000           62
    PYRRHOPHYTA
    .DINOPHYCEAE                    DINOFLAGELLATES
    ..PERIDINIALES
    ...GLENODINIACEAE
    ....GLENODINIUM                                         140            1
  NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
        ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
        DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
                          PHYL/DIV 0.647
                             CLASS 0.647
                             ORDER 0.717
                            FAMILY 0.843
                            GENERA 0.961
```

444454093122700 LANGHOVEN LAKE AT EAGAN VILLAGE, MINN
LAT 44-44-54 LONG 093-12-27 SEQ 00

OCT. 30, 1974
1015 HOURS

IDENTIFICATION OF PHYTOPLANKTON

15,000 CELLS/ML

_ORGANISM__NAME_______________	_COMMON__NAME______	CELLS/ML	PER_CENT
CHLOROPHYTA	GREEN ALGAE		
.CHLOROPHYCEAE			
..CHLOROCOCCALES			
...OOCYSTACEAE			
....ANKISTRODESMUS		81	1
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..CENTRALES	CENTRIC		
...COSCINODISCACEAE			
....CYCLOTELLA		730	5
..PENNALES	PENNATE		
...GOMPHONEMATACEAE			
....GOMPHONEMA		81	1
.CHRYSOPHYCEAE	YELLOW-BROWN ALGAE		
..CHRYSOMONADALES			
...OCHROMONADACEAE			
....UROGLENA		2,200	14
CYANOPHYTA	BLUE-GREEN ALGAE		
.MYXOPHYCEAE			
..OSCILLATORIALES	FILAMENTOUS		
...OSCILLATORIACEAE			
D ....LYNGBYA		5,700	37
....SPIRULINA		320	2
EUGLENOPHYTA	EUGLENOIDS		
.CRYPTOPHYCEAE	CRYPTOMONADS		
..CRYPTOMONADALES			
...CRYPTOCHRYSIDACEAE			
D ....CRYPTOMONAS		3,300	22
.EUGLENOPHYCEAE			
..EUGLENALES			
...EUGLENACEAE			
....EUGLENA		1,800	12
....PHACUS		81	1
....TRACHELOMONAS		81	1
PYRRHOPHYTA			
.DINOPHYCEAE	DINOFLAGELLATES		
..PERIDINIALES			
...GLENODINIACEAE			
....GLENODINIUM		880	6

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 1.[illegible]
CLASS 2.[illegible]
ORDER 2.[illegible]
FAMILY 2.[illegible]
GENERA 2.[illegible]

JUNE 17, 1975
1000 HOURS

IDENTIFICATION OF PHYTOPLANKTON

960 CELLS/ML

_ORGANISM__NAME_______________	_COMMON__NAME______	CELLS/ML	PER_CENT
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..PENNALES	PENNATE		
...ACHNANTHACEAE			
D ....COCCONEIS		280	29
D ....COCCONEIS		600	62
...GOMPHONEMATACEAE			
....GOMPHONEMA		40	4
EUGLENOPHYTA	EUGLENOIDS		
.EUGLENOPHYCEAE			
..EUGLENALES			
...EUGLENACEAE			
....EUGLENA		40	4

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.250
CLASS 0.250
ORDER 0.250
FAMILY 0.497
GENERA 0.497

445042093094400 LEMAY LAKE AT EAGAN VILLAGE. MINN
LAT 44-50-42 LONG 093-09-44 SEQ 00

OCT. 24. 1974
1330 HOURS

IDENTIFICATION OF PHYTOPLANKTON

250.000 CELLS/ML

_ORGANISM__NAME_____________	_COMMON__NAME______	CELLS/ML	PER_CENT
CHLOROPHYTA	GREEN ALGAE		
.CHLOROPHYCEAE			
..CHLOROCOCCALES			
...COELASTRACEAE			
....COELASTRUM		19.000	8
...MICRACTINIACEAE			
L ....MICRACTINIUM			0
...OOCYSTACEAE			
L ....OOCYSTIS			0
L ....TETRAEDRON			0
...SCENEDESMACEAE			
....SCENEDESMUS		3.100	1
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..PENNALES	PENNATE		
...FRAGILARIACEAE			
L ....SYNEDRA			0
.CHRYSOPHYCEAE	YELLOW-BROWN ALGAE		
..CHRYSOMONADALES			
...OCHROMONADACEAE			
....DINOBRYON		3.500	1
CYANOPHYTA	BLUE-GREEN ALGAE		
.MYXOPHYCEAE			
..CHROOCOCCALES	COCCOID		
...CHROOCOCCACEAE			
L ....AGMENELLUM			0
D ....ANACYSTIS		70.000	28
..OSCILLATORIALES	FILAMENTOUS		
...OSCILLATORIACEAE			
D ....LYNGBYA		100.000	40
D ....OSCILLATORIA		45.000	18
L ....SPIRULINA			0
EUGLENOPHYTA	EUGLENOIDS		
.CRYPTOPHYCEAE	CRYPTOMONADS		
..CRYPTOMONADALES			
...CRYPTOCHRYSIDACEAE			
....CRYPTOMONAS		6.400	3

NOTE: D - DOMINANT ORGANISM; GREATER OR EQUAL TO 15%
L - LESS THEN 1%; MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER . 200-X MICROSCOPE
DIVERSITY INDICES. BASED ON ACTUAL COUNTS:
PHYL/DIV 0.750
CLASS 0.776
ORDER 1.557
FAMILY 1.654
GENERA 2.214

JUNE 5. 1975
1300 HOURS

IDENTIFICATION OF PHYTOPLANKTON

280.000 CELLS/ML

_ORGANISM__NAME_____________	_COMMON__NAME______	CELLS/ML	PER_CENT
CHLOROPHYTA	GREEN ALGAE		
.CHLOROPHYCEAE			
..CHLOROCOCCALES			
...OOCYSTACEAE			
....ANKISTRODESMUS		36.000	13
L ....DICTYOSPHAERIUM			0
L ....KIRCHNERIELLA			0
L ....OOCYSTIS			0
...SCENEDESMACEAE			
L ....SCENEDESMUS			0
CYANOPHYTA	BLUE-GREEN ALGAE		
.MYXOPHYCEAE			
..CHROOCOCCALES	COCCOID		
...CHROOCOCCACEAE			
....AGMENELLUM		3.000	1
D ....ANACYSTIS		230.000	84
..OSCILLATORIALES	FILAMENTOUS		
...NOSTOCACEAE			
....APHANIZOMENON		2.000	1

NOTE: D - DOMINANT ORGANISM; GREATER OR EQUAL TO 15%
L - LESS THEN 1%; MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER . 200-X MICROSCOPE
DIVERSITY INDICES. BASED ON ACTUAL COUNTS:
PHYL/DIV 0.593
CLASS 0.593
ORDER 0.652
FAMILY 0.670
GENERA 0.815

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444522093102600  LONG LAKE AT APPLE VALLEY, MINN
     LAT 44-45-22   LONG 093-10-25   SEQ 00

              OCT. 31, 1974
               1000 HOURS

       IDENTIFICATION OF PHYTOPLANKTON

            10,000,000 CELLS/ML

 _ORGANISM__NAME_______________   _COMMON__NAME_______  CELLS/ML      PER_CENT

 CHLOROPHYTA                      GREEN ALGAE
 .CHLOROPHYCEAE
 ..CHLOROCOCCALES
 ...OOCYSTACEAE
L ....DICTYOSPHAERIUM                                                    0
 ...SCENEDESMACEAE
L ....ACTINASTRUM                                                        0
L ....SCENEDESMUS                                                        0
 ..VOLVOCALES
 ...CHLAMYDOMONADACEAE
L ....CHLAMYDOMONAS                                                      0
 CHRYSOPHYTA
 .BACILLARIOPHYCEAE               DIATOMS
 ..CENTRALES                      CENTRIC
 ...COSCINODISCACEAE
L ....MELOSIRA                                                           0
 ..PENNALES                       PENNATE
 ...FRAGILARIACEAE
L ....SYNEDRA                                                            0
 .CHRYSOPHYCEAE                   YELLOW-BROWN ALGAE
 ..CHRYSOMONADALES
 ...OCHROMONADACEAE
L ....OCHROMONAS                                                         0
 CYANOPHYTA                       BLUE-GREEN ALGAE
 .MYXOPHYCEAE
 ..CHROOCOCCALES                  COCCOID
 ...CHROOCOCCACEAE
L ....AGMENELLUM                                                         0
 ....ANACYSTIS                                          120,000          1
 ....GOMPHOSPHAERIA                                      71,000          1
 ..OSCILLATORIALES                FILAMENTOUS
 ...NOSTOCACEAE
 ....ANABAENA                                           190,000          2
 ...OSCILLATORIACEAE
# ....LYNGBYA                                         4,400,000         43
# ....LYNGBYA                                         4,400,000         43
 ....OSCILLATORIA                                       890,000          9
L ....SPIRULINA                                                          0
 EUGLENOPHYTA                     EUGLENOIDS
 .EUGLENOPHYCEAE
 ..EUGLENALES
 ...EUGLENACEAE
L ....EUGLENA                                                            0
L ....TRACHELOMONAS                                                      0

NOTE: # - DOMINANT ORGANISM, GREATER OR EQUAL TO 15%
      L - LESS THAN 1/2 %, MAY NOT HAVE BEEN ACTUALLY COUNTED
      ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER & 200-X MICROSCOPE
      DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
                        DIVISION 0.044
                           CLASS 0.050
                           ORDER 0.200
                          FAMILY 0.333
                          GENERA 0.766
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444925093144701 LONG MEADOW LAKE AT BLOOMINGTON, MINN.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPER-ATURE (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	DIS-SOLVED OXYGEN (MG/L) (00300)	PER-CENT SATUR-ATION (00301)	PH (UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	SUS-PENDED SOLIDS (MG/L) (70299)
SEP., 17...	1010	19.0	16.5	8.9	88	7.5	818	489	.67	0

DATE	TUR-BID-ITY (JTU) (00070)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L) (00625)	SUS-PENDED KJEL. NITRO-GEN (N) (MG/L) (00624)	DIS-SOLVED KJEL. NITRO-GEN (N) (MG/L) (00623)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	TOTAL NITRO-GEN (N) (MG/L) (00600)
SEP., 17...	1	29	84	.76	.24	.52	1.1	1.1	1.9

DATE	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOL-VED PHOS-PHORUS (P) (MG/L) (00666)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	OIL AND GREASE (MG/L) (00550)	TOTAL NITRO-GEN (NO3) (MG/L) (71887)	TOTAL ALUMI-NUM IN BOTTOM MA-TERIAL (UG/G) (01108)	TOTAL ARSENIC IN BOTTOM MA-TERIAL (UG/G) (01003)	TOTAL CADMIUM IN BOTTOM MA-TERIAL (UG/G) (01028)
SEP., 17...	.10	.08	5.3	22	0	8.2	7500	11	4

DATE	ORGANIC CARBON IN BOT-TOM MA-TERIAL (C) (G/KG) (00687)	TOTAL CHRO-MIUM IN BOTTOM MA-TERIAL (UG/G) (01029)	TOTAL COPPER IN BOTTOM MA-TERIAL (UG/G) (01043)	TOTAL LEAD IN BOTTOM MA-TERIAL (UG/G) (01052)	TOTAL MERCURY IN BOTTOM MA-TERIAL (UG/G) (71921)	TOTAL NITRO-GEN IN BOTTOM MATERI-AL (N) (MG/KG) (00603)	OIL AND GREASE IN BOT-TOM MA-TERIAL (MG/KG) (00553)	TOTAL PHOS-PHORUS IN BOT-TOM MA-TERIAL (MG/KG) (00668)	TOTAL ZINC IN BOTTOM MA-TERIAL (UG/G) (01093)
SEP., 17...	101	27	19	80	140	11400	3000	350	98

444955093140202 LONG MEADOW LAKE AT BLOOMINGTON, MINN.

DATE	TIME	AIR TEMPER-ATURE (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	DIS-SOLVED OXYGEN (MG/L) (00300)	PER-CENT SATUR-ATION (00301)	PH (UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	SUS-PENDED SOLIDS (MG/L) (70299)
SEP., 17...	1230	19.0	17.0	11.3	119	7.7	710	433	.59	0

DATE	TUR-BID-ITY (JTU) (00070)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L) (00625)	SUS-PENDED KJEL. NITRO-GEN (N) (MG/L) (00624)	DIS-SOLVED KJEL. NITRO-GEN (N) (MG/L) (00623)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	TOTAL NITRO-GEN (N) (MG/L) (00600)
SEP., 17...	2	20	51	.91	.10	.81	.63	.45	1.5

DATE	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOL-VED PHOS-PHORUS (P) (MG/L) (00666)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	OIL AND GREASE (MG/L) (00550)	TOTAL NITRO-GEN (NO3) (MG/L) (71887)	TOTAL ALUMI-NUM IN BOTTOM MA-TERIAL (UG/G) (01108)	TOTAL ARSENIC IN BOTTOM MA-TERIAL (UG/G) (01003)	TOTAL CADMIUM IN BOTTOM MA-TERIAL (UG/G) (01028)
SEP., 17...	.18	.07	8.0	15	1	6.8	7300	11	2

DATE	ORGANIC CARBON IN BOT-TOM MA-TERIAL (C) (G/KG) (00687)	TOTAL CHRO-MIUM IN BOTTOM MA-TERIAL (UG/G) (01029)	TOTAL COPPER IN BOTTOM MA-TERIAL (UG/G) (01043)	TOTAL LEAD IN BOTTOM MA-TERIAL (UG/G) (01052)	TOTAL MERCURY IN BOTTOM MA-TERIAL (UG/G) (71921)	TOTAL NITRO-GEN IN BOTTOM MATERI-AL (N) (MG/KG) (00603)	OIL AND GREASE IN BOT-TOM MA-TERIAL (MG/KG) (00553)	TOTAL PHOS-PHORUS IN BOT-TOM MA-TERIAL (MG/KG) (00668)	TOTAL ZINC IN BOTTOM MA-TERIAL (UG/G) (01093)
SEP., 17...	87	52	19	80	.0	10400	3000	300	96

444955093140202 LONG MEADOW LAKE AT BLOOMINGTON, MINN.

SEP. 17, 1975
1250 HOURS

IDENTIFICATION OF PHYTOPLANKTON

5,100 CELLS/ML

_ORGANISM__NAME_____________	_COMMON__NAME______	CELLS/ML	PER_CENT
CHLOROPHYTA	GREEN ALGAE		
.CHLOROPHYCEAE			
..CHLOROCOCCALES			
...SCENEDESMACEAE			
....SCENEDESMUS		260	5
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..CENTRALES	CENTRIC		
...COSCINODISCACEAE			
....CYCLOTELLA		260	5
....MELOSIRA		380	8
..PENNALES	PENNATE		
...ACHNANTHACEAE			
....COCCONEIS		510	10
...CYMBELLACEAE			
....AMPHORA		130	3
...FRAGILARIACEAE			
....FRAGILARIA		640	13
....HANNAEA		130	3
...GOMPHONEMATACEAE			
....GOMPHONEMA		190	4
...NAVICULACEAE	NAVICULOID		
....NAVICULA		640	13
...NITZSCHIACEAE			
D ....NITZSCHIA		1,400	28
EUGLENOPHYTA	EUGLENOIDS		
.CRYPTOPHYCEAE	CRYPTOMONADS		
..CRYPTOMONIDALES			
...CRYPTOMONODACEAE			
....CRYPTOMONAS		320	6
.EUGLENOPHYCEAE			
..EUGLENALES			
...EUGLENACEAE			
....EUGLENA		130	3
....PHACUS		130	3

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.785
CLASS 0.898
ORDER 1.606
FAMILY 2.998
GENERA 3.267

445006093141103 LONG MEADOW LAKE AT BLOOMINGTON, MINN.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPER- ATURE (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	DIS- SOLVED OXYGEN (MG/L) (00300)	PER- CENT SATUR- ATION (00301)	PH (UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303)	SUS- PENDED SOLIDS (MG/L) (70299)
SEP., 17...	1630	20.0	20.0	12.2	137	8.1	620	391	.53	0

DATE	TUR- BID- ITY (JTU) (00070)	DIS- SOLVED SODIUM (NA) (MG/L) (00930)	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625)	SUS- PENDED KJEL. NITRO- GEN (N) (MG/L) (00624)	DIS- SOLVED KJEL. NITRO- GEN (N) (MG/L) (00623)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	TOTAL NITRO- GEN (N) (MG/L) (00600)
SEP., 17...	2	18	45	2.8	1.6	.81	.01	.01	2.8

DATE	TOTAL PHOS- PHORUS (P) (MG/L) (00665)	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L) (00666)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)	DIS- SOLVED SILICA (SIO2) (MG/L) (00955)	OIL AND GREASE (MG/L) (00550)	TOTAL NITRO- GEN (NO3) (MG/L) (71887)	TOTAL ALUMI- NUM IN BOTTOM MA- TERIAL (UG/G) (01108)	TOTAL ARSENIC IN BOTTOM MA- TERIAL (UG/G) (01003)	TOTAL CADMIUM IN BOTTOM MA- TERIAL (UG/G) (01028)
SEP., 17...	.07	.01	11	.5	0	11	8500	12	2

DATE	ORGANIC CARBON IN BOT- TOM MA- TERIAL (C) (G/KG) (00687)	TOTAL CHRO- MIUM IN BOTTOM MA- TERIAL (UG/G) (01029)	TOTAL COPPER IN BOTTOM MA- TERIAL (UG/G) (01043)	TOTAL LEAD IN BOTTOM MA- TERIAL (UG/G) (01052)	TOTAL MERCURY IN BOTTOM MA- TERIAL (UG/G) (71921)	TOTAL NITRO- GEN IN BOTTOM MATERI- AL (N) (MG/KG) (00603)	OIL AND GREASE IN BOT- TOM MA- TERIAL (MG/KG) (00553)	TOTAL PHOS- PHORUS IN BOT- TOM MA- TERIAL (MG/KG) (00668)	TOTAL ZINC IN BOTTOM MA- TERIAL (UG/G) (01093)
SEP., 17...	86	82	18	40	.0	9910	5000	290	86

MISCELLANEOUS ANALYSES OF LAKES IN MINNESOTA

445006093141103 LONG MEADOW LAKE AT BLOOMINGTON, MINN.

SEP. 17, 1975
1630 HOURS
IDENTIFICATION OF PHYTOPLANKTON
2,000 CELLS/ML

	_ORGANISM__NAME_______________	_COMMON__NAME_______	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
L	....ANKISTRODESMUS			0
	...SCENEDESMACEAE			
L	....SCENEDESMUS			0
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
	....CYCLOTELLA		35	2
	..PENNALES	PENNATE		
	...ACHNANTHACEAE			
	....COCCONEIS		69	3
	...CYMBELLACEAE			
L	....EPITHEMIA			0
L	....RHOPALODIA			0
	...FRAGILARIACEAE			
	....SYNEDRA		35	2
	...GOMPHONEMATACEAE			
	....GOMPHONEMA		35	2
	...NAVICULACEAE	NAVICULOID		
	....NAVICULA		69	3
	...NITZSCHIACEAE			
	....NITZSCHIA		69	3
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..OSCILLATORIALES	FILAMENTOUS		
	...NOSTOCACEAE			
D	....ANABAENA		1,700	83
	EUGLENOPHYTA	EUGLENOIDS		
	.CRYPTOPHYCEAE	CRYPTOMONADS		
	..CRYPTOMONADALES			
	...CRYPTOMONADACEAE			
L	....CRYPTOMONAS			0
	.EUGLENOPHYCEAE			
	..EUGLENALES			
	...EUGLENACEAE			
	....PHACUS		35	2

NOTE: D = DOMINANT ORGANISM, GREATER OR EQUAL TO 15%
L = LESS THAN 1%, MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.744
CLASS 0.744
ORDER 0.822
FAMILY 1.132
GENERA 1.132

445031093134004 LONG MEADOW LAKE AT BLOOMINGTON, MINN.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPERATURE (DEG C) (00020)	TEMPERATURE (DEG C) (00010)	DISSOLVED OXYGEN (MG/L) (00300)	PERCENT SATURATION (00301)	PH (UNITS) (00400)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L) (70300)	DISSOLVED SOLIDS (TONS PER AC-FT) (70303)	SUSPENDED SOLIDS (MG/L) (70299)
SEP. 17...	1810	20.0	19.0	13.9	153	8.1	640	406	.55	0

DATE	TURBIDITY (JTU) (00070)	DISSOLVED SODIUM (NA) (MG/L) (00930)	DISSOLVED CHLORIDE (CL) (MG/L) (00940)	TOTAL KJELDAHL NITROGEN (N) (MG/L) (00625)	SUSPENDED KJEL. NITROGEN (N) (MG/L) (00624)	DISSOLVED KJEL. NITROGEN (N) (MG/L) (00623)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	TOTAL NITROGEN (N) (MG/L) (00600)
SEP. 17...	1	18	47	1.0	.24	.76	.02	.02	1.0

DATE	TOTAL PHOSPHORUS (P) (MG/L) (00665)	DISSOLVED PHOSPHORUS (P) (MG/L) (00666)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)	DISSOLVED SILICA (SIO2) (MG/L) (00955)	OIL AND GREASE (MG/L) (00550)	TOTAL NITROGEN (NO3) (MG/L) (71887)	TOTAL ALUMINUM IN BOTTOM MATERIAL (UG/G) (01108)	TOTAL ARSENIC IN BOTTOM MATERIAL (UG/G) (01003)	TOTAL CADMIUM IN BOTTOM MATERIAL (UG/G) (01028)
SEP. 17...	.08	.01	8.8	1.1	1	4.5	8100	10	2

DATE	ORGANIC CARBON IN BOTTOM MATERIAL (C) (G/KG) (00687)	TOTAL CHROMIUM IN BOTTOM MATERIAL (UG/G) (01029)	TOTAL COPPER IN BOTTOM MATERIAL (UG/G) (01043)	TOTAL LEAD IN BOTTOM MATERIAL (UG/G) (01052)	TOTAL MERCURY IN BOTTOM MATERIAL (UG/G) (71921)	TOTAL NITROGEN IN BOTTOM MATERIAL (N) (MG/KG) (00603)	OIL AND GREASE IN BOTTOM MATERIAL (MG/KG) (00553)	TOTAL PHOSPHORUS IN BOTTOM MATERIAL (MG/KG) (00668)	TOTAL ZINC IN BOTTOM MATERIAL (UG/G) (01093)
SEP. 17...	76	14	19	30	.0	8560	3000	390	83

445031093134004 LONG MEADOW LAKE AT BLOOMINGTON, MINN.

SEP. 17, 1975
1410 HOURS

IDENTIFICATION OF PHYTOPLANKTON

3,300 CELLS/ML

	ORGANISM NAME	COMMON NAME	CELLS/ML	PER CENT
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
	....CYCLOTELLA		32	1
	..PENNALES	PENNATE		
	...ACHNANTHACEAE			
	....COCCONEIS		64	2
	...CYMBELLACEAE			
L	....RHOPALODIA			0
	...GOMPHONEMATACEAE			
	....GOMPHONEMA		32	1
	...NAVICULACEAE	NAVICULOID		
	....NAVICULA		130	4
	...NITZSCHIACEAE			
	....NITZSCHIA		260	8
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..OSCILLATORIALES	FILAMENTOUS		
	...NOSTOCACEAE			
D	....ANABAENA		2,600	79
	...OSCILLATORIACEAE			
L	....OSCILLATORIA			0
	EUGLENOPHYTA	EUGLENOIDS		
	.CRYPTOPHYCEAE	CRYPTOMONADS		
	..CRYPTOMONADALES			
	...CRYPTOMONODACEAE			
	....CRYPTOMONAS		160	5
	.EUGLENOPHYCEAE			
	..EUGLENALES			
	...EUGLENACEAE			
L	....PHACUS			0

NOTE: D - DOMINANT ORGANISM, GREATER OR EQUAL TO 15%
L - LESS THEN 1%, MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.897
CLASS 0.897
ORDER 0.949
FAMILY 1.191
GENERA 1.191

445055093130305 LONG MEADOW LAKE AT BLOOMINGTON, MINN.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPERATURE (DEG C) (00020)	TEMPERATURE (DEG C) (00010)	DISSOLVED OXYGEN (MG/L) (00300)	PERCENT SATURATION (00301)	PH (UNITS) (00400)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L) (70300)	DISSOLVED SOLIDS (TONS PER AC-FT) (70303)	SUSPENDED SOLIDS (MG/L) (70299)
SEP., 17...	1525	20.0	19.0	5.7	61	7.7	590	371	.50	12

DATE	TURBIDITY (JTU) (00070)	DISSOLVED SODIUM (NA) (MG/L) (00930)	DISSOLVED CHLORIDE (CL) (MG/L) (00940)	TOTAL KJELDAHL NITROGEN (N) (MG/L) (00625)	SUSPENDED KJEL. NITROGEN (N) (MG/L) (00624)	DISSOLVED KJEL. NITROGEN (N) (MG/L) (00623)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	TOTAL NITROGEN (N) (MG/L) (00600)
SEP., 17...	5	17	40	.76	.16	.60	.01	.01	.77

DATE	TOTAL PHOSPHORUS (P) (MG/L) (00665)	DISSOLVED PHOSPHORUS (P) (MG/L) (00666)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)	DISSOLVED SILICA (SIO2) (MG/L) (00955)	OIL AND GREASE (MG/L) (00550)	TOTAL NITROGEN (NO3) (MG/L) (71887)	TOTAL ALUMINUM IN BOTTOM MATERIAL (UG/G) (01108)	TOTAL ARSENIC IN BOTTOM MATERIAL (UG/G) (01003)	TOTAL CADMIUM IN BOTTOM MATERIAL (UG/G) (01028)
SEP., 17...	.10	.02	9.8	.6	0	3.4	9600	10	2

DATE	ORGANIC CARBON IN BOTTOM MATERIAL (C) (G/KG) (00687)	TOTAL CHROMIUM IN BOTTOM MATERIAL (UG/G) (01029)	TOTAL COPPER IN BOTTOM MATERIAL (UG/G) (01043)	TOTAL LEAD IN BOTTOM MATERIAL (UG/G) (01052)	TOTAL MERCURY IN BOTTOM MATERIAL (UG/G) (71921)	TOTAL NITROGEN IN BOTTOM MATERIAL (N) (MG/KG) (00603)	OIL AND GREASE IN BOTTOM MATERIAL (MG/KG) (00553)	TOTAL PHOSPHORUS IN BOTTOM MATERIAL (MG/KG) (00668)	TOTAL ZINC IN BOTTOM MATERIAL (UG/G) (01093)
SEP., 17...	77	9	19	40	.0	8880	3002	240	90

MISCELLANEOUS ANALYSES OF LAKES IN MINNESOTA

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                 445055093131005  LONG MEADOW LAKE AT BLOOMINGTON, MN
                    LAT 44-50-55   LONG 093-13-10   SEQ 05

                                SEP. 17, 1975
                                 1525 HOURS

                       IDENTIFICATION OF PHYTOPLANKTON

                                8,300 CELLS/ML

_ORGANISM__NAME_______________   _COMMON__NAME_______  CELLS/ML      PER_CENT

CHLOROPHYTA                      GREEN ALGAE
.CHLOROPHYCEAE
..CHLOROCOCCALES
...SCENEDESMACEAE
....SCENEDESMUS                                            620            8
..VOLVOCALES
...CHLAMYDOMONADACEAE
....CHLAMYDOMONAS                                           62            1
CHRYSOPHYTA
.BACILLARIOPHYCEAE               DIATOMS
..CENTRALES                      CENTRIC
...COSCINODISCACEAE
....CYCLOTELLA                                             620            8
....MELOSIRA                                               500            6
..PENNALES                       PENNATE
...ACHNANTHACEAE
....COCCONEIS                                              440            5
...CYMBELLACEAE
....AMPHORA                                                120            2
....CYMBELLA                                               250            3
...EUNOTIACEAE
....EUNOTIA                                                 62            1
...FRAGILARIACEAE
....FRAGILARIA                                             940           11
....SYNEDRA                                                 62            1
...GOMPHONEMATACEAE
....GOMPHONEMA                                             250            3
...NAVICULACEAE                  NAVICULOID
....CALONEIS                                                62            1
....NAVICULA                                               690            8
...NITZSCHIACEAE
....NITZSCHIA                                              560            7
...TABELLARIACEAE
....TABELLARIA                                              62            1
CYANOPHYTA                       BLUE-GREEN ALGAE
.MYXOPHYCEAE
..CHROOCOCCALES                  COCCOID
...CHROOCOCCACEAE
....ANACYSTIS                                              250            3
EUGLENOPHYTA                     EUGLENOIDS
.CRYPTOPHYCEAE                   CRYPTOMONADS
..CRYPTOMONADALES
...CRYPTOMONADACEAE
....CRYPTOMONAS                                            690            8
.EUGLENOPHYCEAE
..EUGLENALES
...EUGLENACEAE
# ....PHACUS                                            2,000           24
....TRACHELOMONAS                                           62            1


NOTE: # - DOMINANT ORGANISM, GREATER OR EQUAL TO 15%
      ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
      DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
                          PHYLUM 1.448
                           CLASS 1.716
                           ORDER 2.198
                          FAMILY 3.300
                          GENERA 3.602
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444443093090500 MCCARTHY LAKE AT EAGAN VILLAGE, MINN
LAT 44-44-43 LONG 093-09-05 SEQ 00

OCT. 14, 1974
1300 HOURS

IDENTIFICATION OF PHYTOPLANKTON

2,400 CELLS/ML

_ORGANISM__NAME_____________	_COMMON__NAME______	CELLS/ML	PER_CENT
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..PENNALES	PENNATE		
...NAVICULACEAE	NAVICULOID		
....NAVICULA		24	1
...NITZSCHIACEAE			
....NITZSCHIA		49	2
.CHRYSOPHYCEAE	YELLOW-BROWN ALGAE		
..CHRYSOMONADALES			
...OCHROMONADACEAE			
....OCHROMONAS		120	5
CYANOPHYTA	BLUE-GREEN ALGAE		
.MYXOPHYCEAE			
..OSCILLATORIALES	FILAMENTOUS		
...OSCILLATORIACEAE			
D ....LYNGBYA		1,800	74
EUGLENOPHYTA	EUGLENOIDS		
.CRYPTOPHYCEAE	CRYPTOMONADS		
..CRYPTOMONADALES			
...CRYPTOMONADACEAE			
....CRYPTOMONAS		240	10
.EUGLENOPHYCEAE			
..EUGLENALES			
...EUGLENACEAE			
....EUGLENA		49	2
....PHACUS		24	1
....TRACHELOMONAS		98	4
PYRRHOPHYTA			
.DINOPHYCEAE	DINOFLAGELLATES		
..PERIDINIALES			
...GLENODINIACEAE			
....GLENODINIUM		24	1

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 1.121
CLASS 1.366
ORDER 1.366
FAMILY 1.394
GENERA 1.491

JUNE 13, 1975
1130 HOURS

IDENTIFICATION OF PHYTOPLANKTON

1,200 CELLS/ML

_ORGANISM__NAME_____________	_COMMON__NAME______	CELLS/ML	PER_CENT
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..PENNALES	PENNATE		
...NITZSCHIACEAE			
....NITZSCHIA		16	1
.XANTHOPHYCEAE	YELLOW-GREEN ALGAE		
..HETEROCOCCALES			
...CHLOROTHECIACEAE			
....OPHIOCYTIUM		8	1
CYANOPHYTA	BLUE-GREEN ALGAE		
.MYXOPHYCEAE			
..CHROOCOCCALES	COCCOID		
...CHROOCOCCACEAE			
D ....GOMPHOSPHAERIA		730	63
..OSCILLATORIALES	FILAMENTOUS		
...NOSTOCACEAE			
....ANABAENA		120	10
....APHANIZOMENON		160	14
...OSCILLATORIACEAE			
....LYNGBYA		97	8
EUGLENOPHYTA	EUGLENOIDS		
.EUGLENOPHYCEAE			
..EUGLENALES			
...EUGLENACEAE			
....TRACHELOMONAS		24	2

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.293
CLASS 0.312
ORDER 1.201
FAMILY 1.471
GENERA 1.712

MISCELLANEOUS ANALYSES OF LAKES IN MINNESOTA

444737093130800 POND AP-9 AT EAGAN, MINN.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPER- ATURE (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	DIS- SOLVED OXYGEN (MG/L) (00300)	PER- CENT SATUR- ATION (00301)	PH (UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300)
SEP. 19...	1020	11.5	14.5	9.4	94	7.7	200	122

DATE	DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303)	SUS- PENDED SOLIDS (MG/L) (70299)	TUR- BID- ITY (JTU) (00070)	DIS- SOLVED SODIUM (NA) (MG/L) (00930)	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	TOTAL NITRO- GEN (N) (MG/L) (00600)
SEP. 19...	.17	112	6	8.2	14	1.5	.01	.01	1.5

DATE	TOTAL PHOS- PHORUS (P) (MG/L) (00665)	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L) (00666)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)	DIS- SOLVED SILICA (SIO2) (MG/L) (00955)	OIL AND GREASE (MG/L) (00550)	FECAL COLI- FORM (COL. PER 100 ML) (31616)	STREP- TOCOCCI (COL- ONIES PER 100 ML) (31679)	TOTAL NITRO- GEN (NO3) (MG/L) (71887)
SEP. 19...	.07	.03	11	2.1	2	18	130	6.7

SEP. 19, 1975
1020 HOURS

IDENTIFICATION OF PHYTOPLANKTON

3,900 CELLS/ML

	_ORGANISM__NAME_______________	_COMMON__NAME______	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...HYDRODICTYACEAE			
L	....PEDIASTRUM			0
	...OOCYSTACEAE			
L	....ANKISTRODESMUS			0
D	....KIRCHNERIELLA		560	15
	...SCENEDESMACEAE			
D	....SCENEDESMUS		1,100	29
	..ZYGNEMATALES			
	...DESMIDIACEAE	PLACODERM DESMIDS		
L	....CLOSTERIUM			0
L	....STAURASTRUM			0
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..PENNALES	PENNATE		
	...FRAGILARIACEAE			
	....FRAGILARIA		70	2
	....HANNAEA		70	2
	....SYNEDRA		210	5
	...GOMPHONEMATACEAE			
	....GOMPHONEMA		140	4
	...NAVICULACEAE	NAVICULOID		
	....NAVICULA		70	2
	....PINNULARIA		70	2
	...NITZSCHIACEAE			
	....NITZSCHIA		490	13
	.CHRYSOPHYCEAE	YELLOW-BROWN ALGAE		
	..CHRYSOMONADALES			
	...OCHROMONADACEAE			
	....DINOBRYON		140	4
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..OSCILLATORIALES	FILAMENTOUS		
	...NOSTOCACEAE			
L	....APHANIZOMENON			0
	...OSCILLATORIACEAE			
L	....OSCILLATORIA			0
	EUGLENOPHYTA	EUGLENOIDS		
	.EUGLENOPHYCEAE			
	..EUGLENALES			
	...EUGLENACEAE			
	....EUGLENA		70	2
	....TRACHELOMONAS		140	4
	PYRRHOPHYTA			
	.DINOPHYCEAE	DINOFLAGELLATES		
	..PERIDINIALES			
	...CERATIACEAE			
D	....CERATIUM		700	18

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
L - LESS THAN 1%: MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER, 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 1.726
CLASS 1.890
ORDER 1.890
FAMILY 2.813
GENERA 3.025

444715093133100 POND AP-10 AT EAGAN, MINN.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPER- ATURE (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	DIS- SOLVED OXYGEN (MG/L) (00300)	PER- CENT SATUR- ATION (00301)	PH (UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303)
SEP. 19...	1140	10.0	12.0	.8	8	6.3	200	180	.24

DATE	SUS- PENDED SOLIDS (MG/L) (70299)	TUR- BID- ITY (JTU) (00070)	DIS- SOLVED SODIUM (NA) (MG/L) (00930)	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625)	SUS- PENDED KJEL. NITRO- GEN (N) (MG/L) (00624)	DIS- SOLVED KJEL. NITRO- GEN (N) (MG/L) (00623)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
SEP. 19...	6	9	1.1	4.1	5.9	2.4	3.5	.03	.02

DATE	TOTAL NITRO- GEN (N) (MG/L) (00600)	TOTAL PHOS- PHORUS (P) (MG/L) (00665)	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L) (00666)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)	DIS- SOLVED SILICA (SIO2) (MG/L) (00955)	OIL AND GREASE (MG/L) (00550)	FECAL COLI- FORM (COL. PER 100 ML) (31616)	STREP- TOCOCCI (COL- ONIES PER 100 ML) (31679)	TOTAL NITRO- GEN (NO3) (MG/L) (71887)
SEP. 19...	5.9	4.6	4.5	42	1.9	3	240	930	26

SEP. 19, 1975
1140 HOURS

IDENTIFICATION OF PHYTOPLANKTON

110,000 CELLS/ML

	_ORGANISM__NAME_____________	_COMMON__NAME______	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
L	....ANKISTRODESMUS			0
L	....DICTYOSPHAERIUM			0
L	....OOCYSTIS			0
L	....TETRAEDRON			0
	...SCENEDESMACEAE			
L	....SCENEDESMUS			0
	..ZYGNEMATALES			
	...DESMIDIACEAE	PLACODERM DESMIDS		
L	....CLOSTERIUM			0
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..PENNALES	PENNATE		
	...FRAGILARIACEAE			
	....SYNEDRA		600	1
	...NAVICULACEAE	NAVICULOID		
L	....PINNULARIA			0
	...NITZSCHIACEAE			
	....NITZSCHIA		6,000	6
	.XANTHOPHYCEAE	YELLOW-GREEN ALGAE		
	..HETEROTRICHALES			
	...TRIBONEMATACEAE			
	....TRIBONEMA		1,200	1
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..CHROOCOCCALES	COCCOID		
	...CHROOCOCCACEAE			
D	....ANACYSTIS		97,000	91
L	....GOMPHOSPHAERIA			0
	EUGLENOPHYTA	EUGLENOIDS		
	.CRYPTOPHYCEAE	CRYPTOMONADS		
	..CRYPTOMONIDALES			
	...CRYPTOMONODACEAE			
L	....CRYPTOMONAS			0
	.EUGLENOPHYCEAE			
	..EUGLENALES			
	...EUGLENACEAE			
L	....EUGLENA			0
L	....PHACUS			0
	....TRACHELOMONAS		600	1

NOTE: D = DOMINANT ORGANISM; GREATER OR EQUAL TO 15%
L = LESS THEN 1%; MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.462
CLASS 0.504
ORDER 0.509
FAMILY 0.553
GENERA 0.561

445207093041605 SCHMIDT LAKE AT INVER GROVE HEIGHTS, MINN.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPER- ATURE (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	DIS- SOLVED OXYGEN (MG/L) (00300)	PER- CENT SATUR- ATION (00301)	CARBON DIOXIDE (CO2) (MG/L) (00405)	PH (UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303)
JAN., 30...	1145	-15.0	.0	.7	5	13	7.5	729	443	.60
JUNE 25...	1315	27.0	24.0	11.5	136	.0	9.5	319	201	.27

DATE	SUS- PENDED SOLIDS (MG/L) (70299)	TUR- BID- ITY (JTU) (00070)	DIS- SOLVED CAL- CIUM (CA) (MG/L) (00915)	DIS- SOLVED SODIUM (NA) (MG/L) (00930)	ALKA- LINITY AS CACO3 (MG/L) (00410)	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625)	SUS- PENDED KJEL. NITRO- GEN (N) (MG/L) (00624)	DIS- SOLVED KJEL. NITRO- GEN (N) (MG/L) (00623)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)
JAN., 30...	34	6	70	44	213	97	5.0	1.0	4.0	.12
JUNE 25...	0	2	26	24	79	50	1.7	.79	.91	.02

JAN. 30, 1975
1145 HOURS

IDENTIFICATION OF PHYTOPLANKTON

4,500 CELLS/ML

_ORGANISM__NAME_______________	_COMMON__NAME_______	CELLS/ML	PER_CENT
CHLOROPHYTA	GREEN ALGAE		
.CHLOROPHYCEAE			
..CHLOROCOCCALES			
...OOCYSTACEAE			
....ANKISTRODESMUS		44	1
....CHLORELLA		89	2
..VOLVOCALES			
...CHLAMYDOMONADACEAE			
....CHLAMYDOMONAS		44	1
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..PENNALES	PENNATE		
...CYMBELLACEAE			
....AMPHORA		44	1
...NAVICULACEAE	NAVICULOID		
....NAVICULA		44	1
...NITZSCHIACEAE			
....NITZSCHIA		44	1
CYANOPHYTA	BLUE-GREEN ALGAE		
.MYXOPHYCEAE			
..CHROOCOCCALES	COCCOID		
...CHROOCOCCACEAE			
D ....ANACYSTIS		3,300	73
EUGLENOPHYTA	EUGLENOIDS		
.CRYPTOPHYCEAE	CRYPTOMONADS		
..CRYPTOMONIDALES			
...CRYPTOMONODACEAE			
....CRYPTOMONAS		620	14
.EUGLENOPHYCEAE			
..EUGLENALES			
...EUGLENACEAE			
....EUGLENA		220	5
PYRRHOPHYTA			
.DINOPHYCEAE	DINOFLAGELLATES		
..PERIDINIALES			
...GLENODINIACEAE			
....GLENODINIUM		89	2

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 1.232
CLASS 1.346
ORDER 1.418
FAMILY 1.465
GENERA 1.492

445207093041605 SCHMIDT LAKE AT INVER GROVE HEIGHTS, MINN.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	TOTAL NITRO-GEN (N) (MG/L) (00600)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOL-VED PHOS-PHORUS (P) (MG/L) (00666)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	FECAL COLI-FORM (COL. PER 100 ML) (31616)	STREP-TOCOCCI (COL-ONIES PER 100 ML) (31679)	TOTAL NITRO-GEN (NO3) (MG/L) (71887)	TOTAL ALUMI-NUM IN BOTTOM MA-TERIAL (UG/G) (01108)
JAN. 30...	.01	5.1	.28	.25	24	13	0	0	23	16000
JUNE 25...	.02	1.7	.17	.08	11	2.6	--	--	7.6	--

DATE	TOTAL ARSENIC IN BOTTOM MA-TERIAL (UG/G) (01003)	TOTAL CADMIUM IN BOTTOM MA-TERIAL (UG/G) (01028)	ORGANIC CARBON IN BOT-TOM MA-TERIAL (C) (G/KG) (00687)	TOTAL CHRO-MIUM IN BOTTOM MA-TERIAL (UG/G) (01029)	TOTAL COPPER IN BOTTOM MA-TERIAL (UG/G) (01043)	TOTAL LEAD IN BOTTOM MA-TERIAL (UG/G) (01052)	TOTAL MERCURY IN BOTTOM MA-TERIAL (UG/G) (71921)	TOTAL NITRO-GEN IN BOTTOM MATERI-AL (N) (MG/KG) (00603)	TOTAL PHOS-PHORUS IN BOT-TOM MA-TERIAL (MG/KG) (00668)	TOTAL ZINC IN BOTTOM MA-TERIAL (UG/G) (01093)
JAN. 30...	8	3	77	21	25	50	.0	10000	110	81
JUNE 25...	--	--	--	--	--	--	--	--	--	--

JUNE 25, 1975
1315 HOURS

IDENTIFICATION OF PHYTOPLANKTON

5,500 CELLS/ML

	_ORGANISM__NAME_____	_COMMON__NAME_____	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...CHARACIACEAE			
	....SCHROEDERIA		260	5
	...OOCYSTACEAE			
	....ANKISTRODESMUS		210	4
	...SCENEDESMACEAE			
	....SCENEDESMUS		210	4
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..PENNALES	PENNATE		
	...NITZSCHIACEAE			
	....NITZSCHIA		410	8
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..CHROOCOCCALES	COCCOID		
	...CHROOCOCCACEAE			
D	....AGMENELLUM		1,200	23
D	....ANACYSTIS		2,700	49
	..OSCILLATORIALES	FILAMENTOUS		
	...OSCILLATORIACEAE			
	....OSCILLATORIA		410	8
	EUGLENOPHYTA	EUGLENOIDS		
	.EUGLENOPHYCEAE			
	..EUGLENALES			
	...EUGLENACEAE			
	....TRACHELOMONAS		52	1

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.982
CLASS 0.982
ORDER 1.342
FAMILY 1.535
GENERA 2.180

MISCELLANEOUS ANALYSES OF LAKES IN MINNESOTA

445216093042604 SCHMIDT LAKE AT INVER GROVE HEIGHTS, MINN.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPERATURE (DEG C) (00020)	TEMPERATURE (DEG C) (00010)	DISSOLVED OXYGEN (MG/L) (00300)	PERCENT SATURATION (00301)	CARBON DIOXIDE (CO2) (MG/L) (00405)	PH (UNITS) (00400)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L) (70300)	DISSOLVED SOLIDS (TONS PER AC-FT) (70303)
JAN. 30...	1230	-15.0	.0	.7	5	14	7.4	675	402	.55
JUNE 25...	1245	27.0	25.0	10.0	122	.2	8.9	369	224	.30

DATE	SUSPENDED SOLIDS (MG/L) (70299)	TURBIDITY (JTU) (00070)	DISSOLVED CALCIUM (CA) (MG/L) (00915)	DISSOLVED SODIUM (NA) (MG/L) (00930)	ALKALINITY AS CACO3 (MG/L) (00410)	DISSOLVED CHLORIDE (CL) (MG/L) (00940)	TOTAL KJELDAHL NITROGEN (N) (MG/L) (00625)	SUSPENDED KJEL. NITROGEN (N) (MG/L) (00624)	DISSOLVED KJEL. NITROGEN (N) (MG/L) (00623)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)
JAN. 30...	7	3	62	39	184	87	3.0	.20	2.8	.05
JUNE 25...	16	4	39	25	95	48	2.2	.50	1.7	.11

JAN. 30, 1975
1230 HOURS

IDENTIFICATION OF PHYTOPLANKTON

5,000 CELLS/ML

	_ORGANISM__NAME_____________	_COMMON__NAME______	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
	....KIRCHNERIELLA		42	1
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
	....CYCLOTELLA		120	3
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..CHROOCOCCALES	COCCOID		
	...CHROOCOCCACEAE			
	....ANACYSTIS		210	4
	..OSCILLATORIALES	FILAMENTOUS		
	...OSCILLATORIACEAE			
D	....LYNGBYA		1,200	25
D	....OSCILLATORIA		3,100	63
	EUGLENOPHYTA	EUGLENOIDS		
	.CRYPTOPHYCEAE	CRYPTOMONADS		
	..CRYPTOMONADALES			
	...CRYPTOMONADACEAE			
	....CRYPTOMONAS		250	5

NOTE: D = DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.522
CLASS 0.522
ORDER 0.766
FAMILY 0.766
GENERA 1.522

445216093042604 SCHMIDT LAKE AT INVER GROVE HEIGHTS, MINN.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	TOTAL NITRO-GEN (N) (MG/L) (00600)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOL-VED PHOS-PHORUS (P) (MG/L) (00666)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	FECAL COLI-FORM (COL. PER 100 ML) (31616)	STREP-TOCOCCI (COL-ONIES PER 100 ML) (31679)	TOTAL NITRO-GEN (NO3) (MG/L) (71887)	TOTAL ALUMI-NUM IN BOTTOM MA-TERIAL (UG/G) (01108)
JAN. 30...	.02	3.0	.15	.15	16	12	0	0	13	2100
JUNE 25...	.08	2.3	.10	.06	12	4.8	--	--	10	--

DATE	TOTAL ARSENIC IN BOTTOM MA-TERIAL (UG/G) (01003)	TOTAL CADMIUM IN BOTTOM MA-TERIAL (UG/G) (01028)	ORGANIC CARBON IN BOT-TOM MA-TERIAL (C) (G/KG) (00687)	TOTAL CHRO-MIUM IN BOTTOM MA-TERIAL (UG/G) (01029)	TOTAL COPPER IN BOTTOM MA-TERIAL (UG/G) (01043)	TOTAL LEAD IN BOTTOM MA-TERIAL (UG/G) (01052)	TOTAL MERCURY IN BOTTOM MA-TERIAL (UG/G) (71921)	TOTAL NITRO-GEN IN BOTTOM MATERI-AL (N) (MG/KG) (00603)	TOTAL PHOS-PHORUS IN BOT-TOM MA-TERIAL (MG/KG) (00668)	TOTAL ZINC IN BOTTOM MA-TERIAL (UG/G) (01093)
JAN. 30...	1	2	5.7	3	2	10	.3	700	140	8
JUNE 25...	--	--	--	--	--	--	--	--	--	--

JUNE 25, 1975
1245 HOURS

IDENTIFICATION OF PHYTOPLANKTON

4,200 CELLS/ML

	ORGANISM NAME	COMMON NAME	CELLS/ML	PER CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...CHARACIACEAE			
D	....SCHROEDERIA		1,300	30
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..CENTRALES	CENTRIC		
	...COSCINODISCACEAE			
	....CYCLOTELLA		32	1
	..PENNALES	PENNATE		
	...NAVICULACEAE	NAVICULOID		
	....NAVICULA		63	2
	....PINNULARIA		32	1
	...NITZSCHIACEAE			
	....NITZSCHIA		95	2
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..CHROOCOCCALES	COCCOID		
	...CHROOCOCCACEAE			
	....ANACYSTIS		95	2
	..OSCILLATORIALES	FILAMENTOUS		
	...NOSTOCACEAE			
	....ANABAENA		600	14
	....APHANIZOMENON		190	5
	...OSCILLATORIACEAE			
D	....OSCILLATORIA		1,600	38
	....PHORMIDIUM		250	6

NOTE: D - DOMINANT ORGANISM; GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 1.152
CLASS 1.152
ORDER 1.324
FAMILY 1.420
GENERA 2.362

MISCELLANEOUS ANALYSES OF LAKES IN MINNESOTA

445223093042403 SCHMIDT LAKE AT INVER GROVE HEIGHTS, MINN.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPERATURE (DEG C) (00020)	TEMPERATURE (DEG C) (00010)	DISSOLVED OXYGEN (MG/L) (00300)	PERCENT SATURATION (00301)	CARBON DIOXIDE (CO2) (MG/L) (00405)	PH (UNITS) (00400)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L) (70300)	DISSOLVED SOLIDS (TONS PER AC-FT) (70303)
JAN. 30...	1400	-15.0	1.0	.7	5	11	7.5	675	398	.54
JUNE 25...	1200	27.0	25.5	11.1	137	.3	8.8	356	219	.30

DATE	SUSPENDED SOLIDS (MG/L) (70299)	TURBIDITY (JTU) (00070)	DISSOLVED CALCIUM (CA) (MG/L) (00915)	DISSOLVED SODIUM (NA) (MG/L) (00930)	ALKALINITY AS CACO3 (MG/L) (00410)	DISSOLVED CHLORIDE (CL) (MG/L) (00940)	TOTAL KJELDAHL NITROGEN (N) (MG/L) (00625)	SUSPENDED KJEL. NITROGEN (N) (MG/L) (00624)	DISSOLVED KJEL. NITROGEN (N) (MG/L) (00623)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)
JAN. 30...	4	3	62	38	182	87	3.2	.20	3.0	.07
JUNE 25...	0	4	35	24	93	47	1.3	.10	1.2	.11

JAN. 30, 1975
1400 HOURS

IDENTIFICATION OF PHYTOPLANKTON

11,000 CELLS/ML

	_ORGANISM__NAME	_COMMON__NAME	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
	....ANKISTRODESMUS		90	1
	....CHLORELLA		130	1
	..VOLVOCALES			
	...CHLAMYDOMONADACEAE			
L	....CHLAMYDOMONAS			0
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..PENNALES	PENNATE		
	...NAVICULACEAE	NAVICULOID		
L	....NAVICULA			0
	...NITZSCHIACEAE			
L	....NITZSCHIA			0
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..CHROOCOCCALES	COCCOID		
	...CHROOCOCCACEAE			
D	....AGMENELLUM		2,500	22
D	....ANACYSTIS		6,600	58
	..OSCILLATORIALES	FILAMENTOUS		
	...OSCILLATORIACEAE			
	....OSCILLATORIA		1,300	12
	EUGLENOPHYTA	EUGLENOIDS		
	.CRYPTOPHYCEAE	CRYPTOMONADS		
	..CRYPTOMONIDALES			
	...CRYPTOMONODACEAE			
	....CRYPTOMONAS		220	2
	.EUGLENOPHYCEAE			
	..EUGLENALES			
	...EUGLENACEAE			
	....EUGLENA		130	1
	PYRRHOPHYTA			
	.DINOPHYCEAE	DINOFLAGELLATES		
	..PERIDINIALES			
	...GLENODINIACEAE			
	....GLENODINIUM		180	2

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
L - LESS THEN 1%: MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.545
CLASS 0.575
ORDER 1.101
FAMILY 1.109
GENERA 1.810

445223093042403 SCHMIDT LAKE AT INVER GROVE HEIGHTS, MINN.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	TOTAL NITRO-GEN (N) (MG/L) (00600)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	FECAL COLI-FORM (COL. PER 100 ML) (31616)	STREP-TOCOCCI (COL-ONIES PER 100 ML) (31679)	TOTAL NITRO-GEN (NO3) (MG/L) (71887)	TOTAL ALUMI-NUM IN BOTTOM MA-TERIAL (UG/G) (01108)
JAN. 30...	.02	3.3	.15	.14	14	12	0	0	14	9100
JUNE 25...	.11	1.4	.08	.03	12	4.7	--	--	6.2	--

DATE	TOTAL ARSENIC IN BOTTOM MA-TERIAL (UG/G) (01003)	TOTAL CADMIUM IN BOTTOM MA-TERIAL (UG/G) (01028)	ORGANIC CARBON IN BOT-TOM MA-TERIAL (C) (G/KG) (00687)	TOTAL CHRO-MIUM IN BOTTOM MA-TERIAL (UG/G) (01029)	TOTAL COPPER IN BOTTOM MA-TERIAL (UG/G) (01043)	TOTAL LEAD IN BOTTOM MA-TERIAL (UG/G) (01052)	TOTAL MERCURY IN BOTTOM MA-TERIAL (UG/G) (71921)	TOTAL NITRO-GEN IN BOTTOM MATERI-AL (N) (MG/KG) (00603)	TOTAL PHOS-PHORUS IN BOT-TOM MA-TERIAL (MG/KG) (00668)	TOTAL ZINC IN BOTTOM MA-TERIAL (UG/G) (01093)
JAN. 30...	10	8	86	22	26	60	.1	15000	450	96
JUNE 25...	--	--	--	--	--	--	--	--	--	--

JUNE 25, 1975
1200 HOURS

IDENTIFICATION OF PHYTOPLANKTON

4,700 CELLS/ML

	_ORGANISM__NAME_______________	_COMMON__NAME______	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...CHARACIACEAE			
D	....SCHROEDERIA		1,700	35
	...HYDRODICTYACEAE			
	....PEDIASTRUM		540	11
	...SCENEDESMACEAE			
	....ACTINASTRUM		390	8
	..VOLVOCALES			
	...CHLAMYDOMONADACEAE			
	....CHLAMYDOMONAS		97	2
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..OSCILLATORIALES	FILAMENTOUS		
	...NOSTOCACEAE			
D	....ANABAENA		1,900	42
	EUGLENOPHYTA	EUGLENOIDS		
	.EUGLENOPHYCEAE			
	..EUGLENALES			
	...EUGLENACEAE			
	....EUGLENA		69	1

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 1.055
CLASS 1.055
ORDER 1.184
FAMILY 1.898
GENERA 1.898

MISCELLANEOUS ANALYSES OF LAKES IN MINNESOTA

445224093043302 SCHMIDT LAKE AT INVER GROVE HEIGHTS, MINN.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPER-ATURE (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	DIS-SOLVED OXYGEN (MG/L) (00300)	PER-CENT SATUR-ATION (00301)	CARBON DIOXIDE (CO2) (MG/L) (00405)	PH (UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)
JAN., 30...	1445	-15.0	1.5	.7	5	11	7.5	780	388	.53
JUNE 25...	1130	27.0	25.5	11.2	138	.1	9.2	362	228	.31

DATE	SUS-PENDED SOLIDS (MG/L) (70299)	TUR-BID-ITY (JTU) (00070)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	ALKA-LINITY AS CACO3 (MG/L) (00410)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L) (00625)	SUS-PENDED KJEL. NITRO-GEN (N) (MG/L) (00624)	DIS-SOLVED KJEL. NITRO-GEN (N) (MG/L) (00623)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)
JAN., 30...	7	4	61	38	184	84	3.2	.20	3.0	.02
JUNE 25...	12	8	33	24	95	40	1.8	.89	.91	.08

JAN. 30, 1975
1445 HOURS

IDENTIFICATION OF PHYTOPLANKTON

7,700 CELLS/ML

ORGANISM NAME	COMMON NAME	CELLS/ML	PER CENT
CHLOROPHYTA	GREEN ALGAE		
.CHLOROPHYCEAE			
..CHLOROCOCCALES			
...OOCYSTACEAE			
....CHLORELLA		40	1
....KIRCHNERIELLA		40	1
..VOLVOCALES			
...CHLAMYDOMONADACEAE			
....CHLAMYDOMONAS		80	1
CHRYSOPHYTA			
.BACILLARIOPHYCEAE	DIATOMS		
..CENTRALES	CENTRIC		
...COSCINODISCACEAE			
....CYCLOTELLA		80	1
CYANOPHYTA	BLUE-GREEN ALGAE		
.MYXOPHYCEAE			
..CHROOCOCCALES	COCCOID		
...CHROOCOCCACEAE			
D ....AGMENELLUM		2,400	31
D ....ANACYSTIS		3,400	44
..OSCILLATORIALES	FILAMENTOUS		
...OSCILLATORIACEAE			
D ....LYNGBYA		1,200	16
EUGLENOPHYTA	EUGLENOIDS		
.CRYPTOPHYCEAE	CRYPTOMONADS		
..CRYPTOMONIDALES			
...CRYPTOMONODACEAE			
....CRYPTOMONAS		400	5
.EUGLENOPHYCEAE			
..EUGLENALES			
...EUGLENACEAE			
....EUGLENA		80	1
PYRRHOPHYTA			
.DINOPHYCEAE	DINOFLAGELLATES		
..PERIDINIALES			
...GLENODINIACEAE			
....GLENODINIUM		80	1

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.643
CLASS 0.646
ORDER 1.301
FAMILY 1.301
GENERA 2.036

MISCELLANEOUS ANALYSES OF LAKES IN MINNESOTA

445224093043302 SCHMIDT LAKE AT INVER GROVE HEIGHTS, MINN.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	TOTAL NITRO-GEN (N) (MG/L) (00600)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	FECAL COLI-FORM (COL. PER 100 ML) (31616)	STREP-TOCOCCI (COL-ONIES PER 100 ML) (31679)	TOTAL NITRO-GEN (NO3) (MG/L) (71887)	TOTAL ALUMI-NUM IN BOTTOM MA-TERIAL (UG/G) (01108)
JAN. 30...	.01	3.2	.20	.20	17	12	0	0	16	17000
JUNE 25...	.08	1.5	.08	.02	12	4.7	--	--	6.6	--

DATE	TOTAL ARSENIC IN BOTTOM MA-TERIAL (UG/G) (01003)	TOTAL CADMIUM IN BOTTOM MA-TERIAL (UG/G) (01028)	ORGANIC CARBON IN BOT-TOM MA-TERIAL (C) (G/KG) (00687)	TOTAL CHRO-MIUM IN BOTTOM MA-TERIAL (UG/G) (01029)	TOTAL COPPER IN BOTTOM MA-TERIAL (UG/G) (01043)	TOTAL LEAD IN BOTTOM MA-TERIAL (UG/G) (01052)	TOTAL MERCURY IN BOTTOM MA-TERIAL (UG/G) (71921)	TOTAL NITRO-GEN IN BOTTOM MATERI-AL (N) (MG/KG) (00603)	TOTAL PHOS-PHORUS IN BOT-TOM MA-TERIAL (MG/KG) (00668)	TOTAL ZINC IN BOTTOM MA-TERIAL (UG/G) (01093)
JAN. 30...	10	[illegible]	52	20	27	70	.0	8000	66	91
JUNE 25...	--	--	--	--	--	--	--	--	--	--

JUNE 25, 1975
1130 HOURS

IDENTIFICATION OF PHYTOPLANKTON

25,000 CELLS/ML

	_ORGANISM__NAME_______________	_COMMON__NAME_______	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...CHARACIACEAE			
	....SCHROEDERIA		1,500	6
	...OOCYSTACEAE			
L	....ANKISTRODESMUS			0
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..CHROOCOCCALES	COCCOID		
	...CHROOCOCCACEAE			
	....ANACYSTIS		1,400	6
	..OSCILLATORIALES	FILAMENTOUS		
	...NOSTOCACEAE			
D	....ANABAENA		14,000	56
D	....APHANIZOMENON		7,800	31
	EUGLENOPHYTA	EUGLENOIDS		
	.EUGLENOPHYCEAE			
	..EUGLENALES			
	...EUGLENACEAE			
L	....EUGLENA			0
L	....PHACUS			0
L	....TRACHELOMONAS			0

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
L - LESS THEN 1%: MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.407
CLASS 0.407
ORDER 0.710
FAMILY 0.727
GENERA 1.562

445230093043701 SCHMIDT LAKE AT INVER GROVE HEIGHTS, MINN.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	AIR TEMPERATURE (DEG C) (00020)	TEMPERATURE (DEG C) (00010)	DISSOLVED OXYGEN (MG/L) (00300)	PERCENT SATURATION (00301)	CARBON DIOXIDE (CO2) (MG/L) (00405)	PH (UNITS) (00400)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L) (70300)	DISSOLVED SOLIDS (TONS PER AC-FT) (70303)
JAN. 30...	1530	-15.0	1.5	.6	4	11	7.5	625	390	.53
JUNE 25...	1100	27.0	25.5	12.2	151	.1	9.2	359	226	.31

DATE	SUSPENDED SOLIDS (MG/L) (70299)	TURBIDITY (JTU) (00070)	DISSOLVED CALCIUM (CA) (MG/L) (00915)	DISSOLVED SODIUM (NA) (MG/L) (00930)	ALKALINITY AS CACO3 (MG/L) (00410)	DISSOLVED CHLORIDE (CL) (MG/L) (00940)	TOTAL KJELDAHL NITROGEN (N) (MG/L) (00625)	SUSPENDED KJEL. NITROGEN (N) (MG/L) (00624)	DISSOLVED KJEL. NITROGEN (N) (MG/L) (00623)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)
JAN. 30...	9	5	60	37	175	86	2.9	.10	2.8	.08
JUNE 25...	0	2	33	24	94	49	1.4	.20	1.2	.00

DATE	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	TOTAL NITROGEN (N) (MG/L) (00600)	TOTAL PHOSPHORUS (P) (MG/L) (00665)	DISSOLVED PHOSPHORUS (P) (MG/L) (00666)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)	DISSOLVED SILICA (SIO2) (MG/L) (00955)	FECAL COLIFORM (COL. PER 100 ML) (31616)	STREPTOCOCCI (COLONIES PER 100 ML) (31679)	TOTAL NITROGEN (NO3) (MG/L) (71887)	TOTAL ALUMINUM IN BOTTOM MATERIAL (UG/G) (01108)
JAN. 30...	.08	3.0	.19	.19	16	12	8	4	13	15000
JUNE 25...	.00	1.4	.08	.02	10	4.6	--	--	6.2	--

DATE	TOTAL ARSENIC IN BOTTOM MATERIAL (UG/G) (01003)	TOTAL CADMIUM IN BOTTOM MATERIAL (UG/G) (01028)	ORGANIC CARBON IN BOTTOM MATERIAL (C) (G/KG) (00687)	TOTAL CHROMIUM IN BOTTOM MATERIAL (UG/G) (01029)	TOTAL COPPER IN BOTTOM MATERIAL (UG/G) (01043)	TOTAL LEAD IN BOTTOM MATERIAL (UG/G) (01052)	TOTAL MERCURY IN BOTTOM MATERIAL (UG/G) (71921)	TOTAL NITROGEN IN BOTTOM MATERIAL (N) (MG/KG) (00603)	TOTAL PHOSPHORUS IN BOTTOM MATERIAL (MG/KG) (00668)	TOTAL ZINC IN BOTTOM MATERIAL (UG/G) (01093)
JAN. 30...	7	2	49	17	24	90	.0	8000	51	84
JUNE 25...	--	--	--	--	--	--	--	--	--	--

JAN. 30, 1975
1530 HOURS

IDENTIFICATION OF PHYTOPLANKTON

1.200 CELLS/ML

	_ORGANISM__NAME_______________	_COMMON__NAME_______	CELLS/ML	PER_CENT
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..CHROOCOCCALES	COCCOID		
	...CHROOCOCCACEAE			
D	....AGMENELLUM		430	36
D	....ANACYSTIS		290	24
	..OSCILLATORIALES	FILAMENTOUS		
	...OSCILLATORIACEAE			
D	....LYNGBYA		240	20
	EUGLENOPHYTA	EUGLENOIDS		
	.CRYPTOPHYCEAE	CRYPTOMONADS		
	..CRYPTOMONIDALES			
	...CRYPTOMONODACEAE			
	....CRYPTOMONAS		120	10
	.EUGLENOPHYCEAE			
	..EUGLENALES			
	...EUGLENACEAE			
	....EUGLENA		67	6
	PYRRHOPHYTA			
	.DINOPHYCEAE	DINOFLAGELLATES		
	..PERIDINIALES			
	...GLENODINIACEAE			
	....GLENODINIUM		50	4

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.868
CLASS 1.015
ORDER 1.663
FAMILY 1.663
GENERA 2.248

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        445115093052100  SHANAHAN POND AT EAGAN VILLAGE, MINN
             LAT 44-51-15   LONG 093-05-21   SEQ 00

                        OCT. 22, 1974
                         1400 HOURS

                IDENTIFICATION OF PHYTOPLANKTON

                        61,000 CELLS/ML

  _ORGANISM__NAME_______________   _COMMON__NAME______  CELLS/ML      PER_CENT

  CHLOROPHYTA                      GREEN ALGAE
  .CHLOROPHYCEAE
  ..CHLOROCOCCALES
  ...COELASTRACEAE
  ....COELASTRUM                                          1,500            2
  ...HYDRODICTYACEAE
  ....PEDIASTRUM                                          1,800            3
  ...OOCYSTACEAE
  ....ANKISTRODESMUS                                      1,100            2
  ....OOCYSTIS                                            3,700            6
  ...SCENEDESMACEAE
D ....SCENEDESMUS                                        25,000           41
  CHRYSOPHYTA
  .BACILLARIOPHYCEAE               DIATOMS
  ..PENNALES                       PENNATE
  ...FRAGILARIACEAE
L ....SYNEDRA                                                              0
  ...NAVICULACEAE                  NAVICULOID
  ....NAVICULA                                              370            1
  ...NITZSCHIACEAE
  ....NITZSCHIA                                             370            1
  .CHRYSOPHYCEAE                   YELLOW-BROWN ALGAE
  ..CHRYSOMONADALES
  ...OCHROMONADACEAE
  ....DINOBRYON                                           1,500            2
  ....OCHROMONAS                                          3,100            5
  CYANOPHYTA                       BLUE-GREEN ALGAE
  .MYXOPHYCEAE
  ..CHROOCOCCALES                  COCCOID
  ...CHROOCOCCACEAE
D ....GOMPHOSPHAERIA                                     14,000           23
  ..OSCILLATORIALES                FILAMENTOUS
  ...NOSTOCACEAE
  ....ANABAENA                                            1,600            3
  ...OSCILLATORIACEAE
  ....OSCILLATORIA                                        6,000           10
  EUGLENOPHYTA                     EUGLENOIDS
  .CRYPTOPHYCEAE                   CRYPTOMONADS
  ..CRYPTOMONADALES
  ...CRYPTOMONADACEAE
  ....CRYPTOMONAS                                           550            1
  .EUGLENOPHYCEAE
  ..EUGLENALES
  ...EUGLENACEAE
  ....TRACHELOMONAS                                         370            1

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
      L - LESS THEN 1%: MAY NOT HAVE BEEN ACTUALLY COUNTED
      ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
      DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
                        PHYL/DIV 1.411
                           CLASS 1.443
                           ORDER 1.814
                          FAMILY 2.546
                          GENERA 2.674
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445115093062100 SHANAHAN POND AT EAGAN VILLAGE, MINN
LAT 44-51-15 LONG 093-06-21 SEQ 00

JUNE 16, 1975
1300 HOURS

IDENTIFICATION OF PHYTOPLANKTON

7,300 CELLS/ML

	_ORGANISM__NAME_	_COMMON__NAME_	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...HYDRODICTYACEAE			
	....PEDIASTRUM		280	4
	...OCCYSTACEAE			
	....ANKISTRODESMUS		280	4
D	....OOCYSTIS		1,100	16
	....QUADRIGULA		280	4
	...SCENEDESMACEAE			
D	....SCENEDESMUS		2,300	31
	..TETRASPORALES			
	...PALMELLACEAE			
D	....SPHAEROCYSTIS		1,100	16
	..ZYGNEMATALES			
	...DESMIDIACEAE	PLACODERM DESMIDS		
	....STAURASTRUM		140	2
	CHRYSOPHYTA			
	.CHRYSOPHYCEAE	YELLOW-BROWN ALGAE		
	..CHRYSOMONADALES			
	...OCHROMONADACEAE			
	....DINOBRYON		71	1
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..CHROOCOCCALES	COCCOID		
	...CHROOCOCCACEAE			
	....ANACYSTIS		850	12
	EUGLENOPHYTA	EUGLENOIDS		
	.EUGLENOPHYCEAE			
	..EUGLENALES			
	...EUGLENACEAE			
	....TRACHELOMONAS		71	1
	PYRRHOPHYTA			
	.DINOPHYCEAE	DINOFLAGELLATES		
	..PERIDINIALES			
	...CERATIACEAE			
	....CERATIUM		780	11

NOTE: D - DOMINANT ORGANISM; GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 1.140
CLASS 1.140
ORDER 1.818
FAMILY 2.559
GENERA 2.851

444652093131000 SLATER'S ACRES POND AT EAGAN VILLAGE, MINN
LAT 44-46-52 LONG 093-13-10 SEQ 00

OCT. 21, 1974
1300 HOURS

IDENTIFICATION OF PHYTOPLANKTON

2,400 CELLS/ML

	_ORGANISM__NAME_	_COMMON__NAME_	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
	....ANKISTRODESMUS		85	4
	...SCENEDESMACEAE			
	....SCENEDESMUS		300	12
	..ZYGNEMATALES			
	...DESMIDIACEAE	PLACODERM DESMIDS		
	....COSMARIUM		43	2
	....STAURASTRUM		43	2
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..PENNALES	PENNATE		
	...NAVICULACEAE	NAVICULOID		
	....PINNULARIA		43	2
	.CHRYSOPHYCEAE	YELLOW-BROWN ALGAE		
	..CHRYSOMONADALES			
	...OCHROMONADACEAE			
D	....OCHROMONAS		1,100	46
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..OSCILLATORIALES	FILAMENTOUS		
	...OSCILLATORIACEAE			
	....LYNGBYA		340	14
	EUGLENOPHYTA	EUGLENOIDS		
	.CRYPTOPHYCEAE	CRYPTOMONADS		
	..CRYPTOMONIDALES			
	...CRYPTOMONODACEAE			
	....CRYPTOMONAS		300	12
	.EUGLENOPHYCEAE			
	..EUGLENALES			
	...EUGLENACEAE			
	....EUGLENA		43	2
	....TRACHELOMONAS		130	5

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 1.824
CLASS 2.115
ORDER 2.247
FAMILY 2.368
GENERA 2.460

JUNE 18, 1975
1030 HOURS

IDENTIFICATION OF PHYTOPLANKTON

1,100 CELLS/ML

	_ORGANISM__NAME_	_COMMON__NAME_	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...CHARACIACEAE			
D	....SCHROEDERIA		660	62
	..ZYGNEMATALES			
	...DESMIDIACEAE	PLACODERM DESMIDS		
	....STAURASTRUM		37	3
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..OSCILLATORIALES	FILAMENTOUS		
	...NOSTOCACEAE			
D	....ANABAENA		370	34

NOTE: D - DOMINANT ORGANISM: GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.929
CLASS 0.929
ORDER 1.124
FAMILY 1.124
GENERA 1.124

444735093100900 THOMAS LAKE AT EAGAN VILLAGE, MINN.

OCT. 18. 1974
0930 HOURS

IDENTIFICATION OF PHYTOPLANKTON

1.100.000 CELLS/ML

	_ORGANISM__NAME_	_COMMON__NAME_	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...MICRACTINIACEAE			
L	....MICRACTINIUM			0
	...OCCYSTACEAE			
L	....ANKISTRODESMUS			0
	...SCENEDESMACEAE			
L	....SCENEDESMUS			0
	CHRYSOPHYTA			
	.CHRYSOPHYCEAE	YELLOW-BROWN ALGAE		
	..CHRYSOMONADALES			
	...OCHROMONADACEAE			
	....OCHROMONAS		5.700	1
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..CHROOCOCCALES	COCCOID		
	...CHROOCOCCACEAE			
	....ANACYSTIS		87.000	8
	..OSCILLATORIALES	FILAMENTOUS		
	...NOSTOCACEAE			
	....ANABAENA		160.000	14
	...OSCILLATORIACEAE			
	....LYNGBYA		130.000	11
D	....OSCILLATORIA		750.000	66
	EUGLENOPHYTA	EUGLENOIDS		
	.CRYPTOPHYCEAE	CRYPTOMONADS		
	..CRYPTOMONIDALES			
	...CRYPTOMONODACEAE			
L	....CRYPTOMONAS			0

NOTE: D - DOMINANT ORGANISM; GREATER OR EQUAL TO 15%
L - LESS THEN 1%; MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER . 200-X MICROSCOPE
DIVERSITY INDICES. BASED ON ACTUAL COUNTS:
PHYL/DIV 0.138
CLASS 0.138
ORDER 0.527
FAMILY 1.101
GENERA 1.558

JUNE 4. 1975
1000 HOURS

IDENTIFICATION OF PHYTOPLANKTON

160.000 CELLS/ML

	_ORGANISM__NAME_	_COMMON__NAME_	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...MICRACTINIACEAE			
	....MICRACTINIUM		1.200	1
	...OCCYSTACEAE			
	....ANKISTRODESMUS		2.100	1
L	....CHODATELLA			0
	....DICTYOSPHAERIUM		1.200	1
L	....KIRCHNERIELLA			0
L	....TETRAEDRON			0
	...SCENEDESMACEAE			
L	....ACTINASTRUM			0
	....SCENEDESMUS		1.800	1
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..OSCILLATORIALES	FILAMENTOUS		
	...NOSTOCACEAE			
	....APHANIZOMENON		8.100	5
	...OSCILLATORIACEAE			
D	....LYNGBYA		24.000	15
D	....OSCILLATORIA		120.000	75
	EUGLENOPHYTA	EUGLENOIDS		
	.EUGLENOPHYCEAE			
	..EUGLENALES			
	...EUGLENACEAE			
L	....TRACHELOMONAS			0
	PYRRHOPHYTA			
	.DINOPHYCEAE	DINOFLAGELLATES		
	..GYMNODINIALES			
	...GYMNODINIACEAE			
L	....GYMNODINIUM			0

NOTE: D - DOMINANT ORGANISM; GREATER OR EQUAL TO 15%
L - LESS THEN 1%; MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER . 200-X MICROSCOPE
DIVERSITY INDICES. BASED ON ACTUAL COUNTS:
PHYL/DIV 0.302
CLASS 0.302
ORDER 0.302
FAMILY 0.658
GENERA 1.304

444745093094709 WILDERNESS LAKE AT EAGAN VILLAGE, MINN
LAT 44-47-45 LONG 093-09-47 SEQ 00

OCT. 24, 1974
1100 HOURS

IDENTIFICATION OF PHYTOPLANKTON

1,600,000 CELLS/ML

	_ORGANISM__NAME_	_COMMON__NAME_	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...OOCYSTACEAE			
L	....ANKISTRODESMUS			0
L	....KIRCHNERIELLA			0
L	....SELENASTRUM			0
L	....TETRAEDRON			0
	...SCENEDESMACEAE			
L	....ACTINASTRUM			0
	....SCENEDESMUS		32,000	2
	..VOLVOCALES			
	...CHLAMYDOMONADACEAE			
L	....CHLAMYDOMONAS			0
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..PENNALES	PENNATE		
	...NITZSCHIACEAE			
	....NITZSCHIA		8,600	1
	CYANOPHYTA	BLUE-GREEN ALGAE		
	.MYXOPHYCEAE			
	..CHROOCOCCALES	COCCOID		
	...CHROOCOCCACEAE			
D	....ANACYSTIS		290,000	18
	....GOMPHOSPHAERIA		31,000	2
	..OSCILLATORIALES	FILAMENTOUS		
	...OSCILLATORIACEAE			
	....LYNGBYA		65,000	4
D	....OSCILLATORIA		1,200,000	73
	EUGLENOPHYTA	EUGLENOIDS		
	.CRYPTOPHYCEAE	CRYPTOMONADS		
	..CRYPTOMONADALES			
	...CRYPTOMONADACEAE			
L	....CRYPTOMONAS			0
	.EUGLENOPHYCEAE			
	..EUGLENALES			
	...EUGLENACEAE			
L	....EUGLENA			0
L	....TRACHELOMONAS			0

NOTE: D - DOMINANT ORGANISM, GREATER OR EQUAL TO 15%
L - LESS THEN 1%, MAY NOT HAVE BEEN ACTUALLY COUNTED
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.231
CLASS 0.233
ORDER 0.940
FAMILY 0.955
GENERA 1.283

JUNE 4, 1975
1200 HOURS

IDENTIFICATION OF PHYTOPLANKTON

290 CELLS/ML

	_ORGANISM__NAME_	_COMMON__NAME_	CELLS/ML	PER_CENT
	CHLOROPHYTA	GREEN ALGAE		
	.CHLOROPHYCEAE			
	..CHLOROCOCCALES			
	...CHARACIACEAE			
D	....SCHROEDERIA		120	40
	...COELASTRACEAE			
D	....COELASTRUM		120	40
	..ZYGNEMATALES			
	...ZYGNEMATACEAE			
	....MOUGEOTIA		15	5
	CHRYSOPHYTA			
	.BACILLARIOPHYCEAE	DIATOMS		
	..PENNALES	PENNATE		
	...FRAGILARIACEAE			
	....SYNEDRA		15	5
	...NAVICULACEAE	NAVICULOID		
	....NAVICULA		15	5
	EUGLENOPHYTA	EUGLENOIDS		
	.EUGLENOPHYCEAE			
	..EUGLENALES			
	...EUGLENACEAE			
	....EUGLENA		15	5

NOTE: D - DOMINANT ORGANISM, GREATER OR EQUAL TO 15%
ANALYSIS METHOD: SEDGWICK-RAFTER CHAMBER , 200-X MICROSCOPE
DIVERSITY INDICES, BASED ON ACTUAL COUNTS:
PHYL/DIV 0.748
CLASS 0.748
ORDER 1.022
FAMILY 1.922
GENERA 1.922

LAT-I-TUDE	LONG-I-TUDE	SEQ. NO.	LOCAL IDENT-I-FIER	DATE OF SAMPLE	TIME	DEPTH (FT)	TEMPER-ATURE (DEG C)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	VOLA-TILE FILT-RABLE RESIDUE (MG/L)
			BECKER COUNTY							
46 52 39	095 25 13	01	139,36,02CCC OBS WELL ST	75-07-29	0830	16	7.5	540	304	143
46 57 06	095 17 38	01	140,37,12DDB ART GREENRE	75-07-30	1020	98	8.0	485	277	122
46 58 11	095 25 13	01	140,38,01DBA OBS WELL RD	75-07-30	1205	14	8.0	505	255	101
			CARLTON COUNTY							
46 25 03	092 35 40	01	045,16,02BBB P ANDERSON	74-12-21	--	363	--	270	162	39
46 31 10	092 27 58	01	047,17,35BAB R HAMMLITT	75-03-19	1700	270	--	610	339	49
46 33 45	092 36 03	01	047,18,16BBB CLARE OLSON	74-12-22	1700	80	--	425	238	90
46 36 25	092 32 09	01	048,17,30DDD FLOYD REED	74-12-22	1300	107	--	162	105	18
			CASS COUNTY							
46 27 21	094 45 38	01	135,32,33CDD OBS WL STPL	75-07-31	1235	14	8.5	210	147	57
46 39 25	094 45 52	01	137,32,29BBC OBS WL NMRD	75-07-31	1350	10	10.5	190	106	36
			CLAY COUNTY							
47 24 09	091 47 28	01	057,12,27DDD P MILLER	74-12-06	--	26	--	205	103	80
			COOK COUNTY							
47 57 27	090 48 08	01	059,04,17CA TORMUNDSEN	75-04-19	1200	390	--	375	191	25
47 47 21	090 19 39	01	060,01,04CCC R BACKSTROM	75-03-26	0530	55	--	225	135	49
47 42 24	090 31 47	01	060,02,01BDD CASCADE LDG	75-03-26	1400	303	--	155	105	22
47 58 50	089 57 58	01	062,04,17CDC COOK CTY GR	75-04-17	1300	180	--	4510	3010	338
47 57 52	089 41 29	01	063,06,04CDA1 GND PRTAGE	75-03-24	1200	155	--	700	442	115
			DAKOTA COUNTY							
44 47 04	093 17 00	01	027,24,30BCC BURNSVILLE	75-09-04	0830	220	10.0	495	278	128
			HUBBARD COUNTY							
46 49 10	094 54 46	01	139,34,27DDA BOB STEVENS	75-07-29	1655	40	10.5	555	332	165
46 58 01	094 48 38	01	140,33,02DDA AR ALDEN	75-07-29	1400	118	6.5	490	256	97
46 54 45	094 52 11	01	140,33,28CBB R L JAMES	75-07-29	1525	48	7.0	400	271	106
46 55 27	095 03 59	02	140,35,25DCA2 PRK RAPIDS	75-07-30	0840	52	8.5	500	273	134
			AITKIN COUNTY							
47 05 01	093 11 27	01	053,23,12DDA SAN RVR P O	74-11-18	0800	315	7.0	470	339	52
			KANDIYOHI COUNTY							
45 23 38	094 53 43	01	122,34,12ACB1 G EVENSON	75-05-01	0900	--	7.5	700	416	149
			LAKE COUNTY							
47 21 10	091 10 45	01	. . T CLIFFORD	75-03-25	1400	294	--	585	365	36
47 05 40	091 39 59	01	053,10,07BC R FENNER	75-03-22	1700	200	--	230	134	45
47 02 23	091 41 22	01	053,11,35AAA JM OSHAKKEN	75-03-21	1700	665	--	2300	1300	186
47 12 35	091 43 40	01	055,11,34BBD R PETERSON	75-03-22	1300	114	--	265	153	54
47 21 03	091 16 57	01	056,08,12ADD RUDEMACHER	75-04-16	1700	165	--	1600	915	159
47 24 51	091 06 37	01	057,06,20ADA A FENSTAD	75-03-25	1200	70	--	650	339	83
			POPE COUNTY							
45 31 57	095 10 49	01	124,36,22DBC KAY FARMS	74-11-13	1015	--	8.0	420	271	112
45 40 36	095 14 30	01	126,36,32CBC H RAJDL	75-05-01	1800	--	9.0	650	363	139
			RAMSEY COUNTY							
46 44 19	092 32 15	01	049,17,19BAB R FRANK	74-12-11	1600	134	--	220	140	45
46 53 15	092 00 17	01	051,13,21CBB ANDERSN GCY	75-03-20	1700	60	--	435	244	66
46 52 16	092 06 25	01	051,14,27CCA JONES	75-03-20	1600	515	--	255	155	19
46 51 55	092 16 45	02	051,15,32BBB2 PIKE LK SC	74-12-13	1100	730	--	370	239	76
46 54 08	092 20 34	01	051,16,14BCC A J BROWN	74-12-12	1600	63	--	270	165	53
46 56 26	091 54 20	01	052,12,31DCA	75-03-21	1300	200	--	255	166	18
46 58 29	092 08 37	01	052,14,20BDD ASTUBENVOLL	74-11-30	--	290	--	218	123	15
46 51 50	092 48 28	01	052,20,12DDB1 R MAIN	74-11-15	1000	260	6.0	4700	2820	667
46 58 03	092 50 51	01	052,20,27AAA1 ROVOLA	74-11-15	1600	16	3.0	250	163	61
47 06 42	092 09 32	01	053,14,06ABA	74-12-12	1800	38	--	190	135	54
47 05 48	092 24 33	01	053,16,07AA VTHAEMERT	74-12-03	1200	54	--	503	266	86
47 02 34	092 47 03	01	053,19,26CCB SVOBODA	74-11-15	1300	67	10.0	440	246	86
47 03 25	092 55 47	01	053,20,19CCC SCHROEDER	74-11-19	1300	117	9.0	485	288	81
47 10 12	092 28 39	01	054,17,15	74-11-07	1300	65	6.0	440	244	69
47 10 02	093 03 20	01	054,21,07CAA GOODLAND	74-11-24	1300	92	--	322	198	72

MISCELLANEOUS ANALYSES OF GROUND WATER IN MINNESOTA

LAT- I- TUDE	LONG- I- TUDE	SEQ. NO.	DATE OF SAMPLE	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L)	COLOR (PLAT- INUM- COBALT UNITS)	CARBON DIOXIDE (CO2) (MG/L)	PH (UNITS)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	ALKA- LINITY AS CACO3 (MG/L)
BECKER COUNTY												
46 52 39	095 25 13	01	75-07-29	254	7	6.2	7.7	71	16	4.5	2.3	212
46 57 06	095 17 38	01	75-07-30	--	5	12	7.6	70	19	2.3	1.5	240
46 58 11	095 25 13	01	75-07-30	--	7	19	7.4	65	19	1.6	1.7	234
CARLTON COUNTY												
46 25 03	092 35 40	01	74-12-21	164	5	4.8	7.7	19	6.2	33	2.4	122
46 31 10	092 27 58	01	75-03-19	341	3	1.8	8.1	29	11	76	3.7	103
46 33 45	092 38 03	01	74-12-22	252	3	4.5	8.0	38	24	10	1.7	233
46 36 25	092 32 09	01	74-12-22	101	3	2.5	7.7	20	5.8	2.5	.5	65
CASS COUNTY												
46 27 21	094 43 38	01	75-07-31	94	10	1.6	7.9	27	6.9	2.2	1.2	83
46 39 25	094 45 52	01	75-07-31	96	40	8.3	7.2	17	6.2	3.0	1.6	87
CLAY COUNTY												
47 24 09	091 47 28	01	74-12-06	153	0	3.0	7.8	33	11	5.3	2.0	98
COOK COUNTY												
47 37 27	090 48 08	01	75-04-19	189	2	.0	9.3	11	.1	56	.4	27
47 47 21	090 19 49	01	75-03-26	129	5	2.5	7.9	25	12	5.0	1.0	103
47 42 24	090 31 47	01	75-03-26	95	5	.1	8.9	5.2	.0	29	.3	55
47 50 50	089 57 56	01	75-04-17	2500	2	.8	7.5	610	6.9	500	1.2	13
47 57 52	089 41 29	01	75-03-29	422	35	--	--	61	34	34	3.1	176
DAKOTA COUNTY												
44 47 04	093 17 00	01	75-09-04	293	4	22	7.4	72	23	4.7	2.1	279
HUBBARD COUNTY												
46 48 10	094 54 46	01	75-07-29	--	3	5.4	7.9	80	18	3.3	.9	219
46 58 01	094 48 38	01	75-07-29	238	2	8.4	7.7	63	17	2.9	1.2	217
46 54 45	094 52 11	01	75-07-29	237	15	11	7.6	62	15	2.9	1.3	225
46 55 27	095 03 59	02	75-07-30	--	4	12	7.6	67	19	4.1	1.6	253
AITKIN COUNTY												
47 05 01	093 11 27	01	74-11-18	331	3	2.9	6.2	6.6	2.2	120	1.8	233
KANDIYOHI COUNTY												
45 23 38	094 53 43	01	75-05-01	416	5	30	7.4	87	33	19	3.0	342
LAKE COUNTY												
47 21 10	091 10 45	01	75-03-25	353	5	8.3	7.7	33	3.6	95	1.1	212
47 05 40	091 39 59	01	75-03-22	134	5	2.6	7.9	28	10	6.9	.8	107
47 02 23	091 41 22	01	75-03-21	1230	3	.0	9.7	130	.4	320	1.5	51
47 12 35	091 43 40	01	75-03-22	155	5	2.0	8.1	33	13	4.1	1.2	130
47 21 03	091 16 57	01	75-04-16	825	0	.0	9.7	100	.0	200	.8	35
47 24 51	091 06 37	01	75-03-25	324	0	2.7	8.0	45	18	49	1.7	137
POPE COUNTY												
45 31 57	095 10 49	01	74-11-13	275	3	98	6.7	64	17	7.9	1.4	252
45 40 36	095 14 30	01	75-05-01	370	3	17	7.6	86	31	8.5	2.4	357
RAMSEY COUNTY												
46 44 19	092 32 15	01	74-12-11	135	8	3.4	7.8	23	6.2	12	1.1	111
46 53 15	092 00 17	01	75-03-20	253	3	6.4	7.8	33	24	29	1.9	208
46 52 16	092 06 25	01	75-03-20	152	3	2.8	7.9	28	8.5	14	1.1	113
46 51 55	092 16 45	02	74-12-13	237	3	37	6.9	30	10	37	.7	152
46 54 08	092 20 34	01	74-12-12	165	3	4.0	7.8	38	12	3.6	.9	130
46 56 26	091 54 20	01	75-03-21	161	3	1.2	8.3	8.3	2.3	49	.8	125
46 58 29	092 08 37	01	74-11-30	131	3	.2	9.1	1.7	.2	48	.7	99
46 51 50	092 48 28	01	74-11-15	2420	2	4.5	7.5	200	100	560	9.5	73
46 58 03	092 50 51	01	74-11-15	129	2	68	6.3	26	9.5	5.9	3.1	70
47 06 42	092 09 32	01	74-12-12	152	5	39	6.6	29	6.9	4.8	2.0	80
47 05 48	092 24 33	01	74-12-03	289	70	51	7.0	58	27	9.0	2.7	260
47 02 34	092 47 03	01	74-11-15	253	4	6.1	7.9	43	27	11	1.0	247
47 03 25	092 55 47	01	74-11-19	287	0	5.3	7.9	46	16	37	1.8	215
47 10 12	092 28 39	01	74-11-07	257	0	12	7.6	35	25	30	2.1	239
47 10 02	093 03 20	01	74-11-24	193	5	13	7.4	42	14	4.9	1.4	172

MISCELLANEOUS ANALYSES OF GROUND WATER IN MINNESOTA

LAT-I-TUDE	LONG-I-TUDE	SEQ. NO.	DATE OF SAMPLE	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED BORON (B) (UG/L)
BECKER COUNTY												
46 52 39	095 25 13	01	75-07-29	10	8.5	.1	.47	6.7	7.2	.17	14	30
46 57 06	095 17 38	01	75-07-30	1.6	--	.1	.30	.41	.71	.01	14	8
46 58 11	095 25 13	01	75-07-30	2.5	--	.1	.91	.05	.96	.11	13	10
CARLTON COUNTY												
46 25 03	092 35 40	01	74-12-21	4.4	13	.7	.11	.03	.14	.00	12	180
46 31 10	092 27 58	01	75-03-19	110	37	.6	.15	.06	.21	.00	9.8	90
46 33 45	092 38 03	01	74-12-22	.6	5.1	.4	.08	.08	.16	.01	19	100
46 36 25	092 32 09	01	74-12-22	1.0	13	.1	.05	.02	.07	.00	19	10
CASS COUNTY												
46 27 21	094 43 38	01	75-07-31	7.1	2.7	.1	.16	6.1	6.3	.17	9.2	8
46 39 25	094 45 52	01	75-07-31	6.5	5.9	.1	.16	.43	.59	.13	15	10
CLAY COUNTY												
47 24 09	091 47 28	01	74-12-06	2.4	22	.3	.15	3.3	3.5	.00	18	10
COOK COUNTY												
47 37 27	090 48 08	01	75-04-19	71	9.8	2.9	.13	.00	.13	.00	20	1500
47 47 21	090 19 49	01	75-03-26	.8	6.3	1.6	.03	.01	.04	.02	13	30
47 42 24	090 31 47	01	75-03-26	4.9	11	1.8	.00	.00	.00	.01	11	2400
47 50 50	089 57 56	01	75-04-17	1500	61	1.0	2.0	.00	2.0	.00	7.7	1200
47 57 32	089 41 29	01	75-03-29	34	130	3.1	.08	.02	.10	.00	19	190
DAKOTA COUNTY												
44 47 04	093 17 00	01	75-09-04	1.9	7.8	.3	.38	.01	.39	.03	14	20
HUBBARD COUNTY												
46 49 10	094 54 46	01	75-07-29	11	--	.1	.34	3.5	3.8	.01	14	20
46 58 01	094 48 38	01	75-07-29	1.3	5.3	.1	.08	.26	.34	.01	17	6
46 54 45	094 52 11	01	75-07-29	3.1	3.9	.1	.28	.49	.77	.01	14	10
46 55 27	095 03 59	02	75-07-30	.7	--	.2	.38	.00	.38	.10	22	10
AITKIN COUNTY												
47 05 01	093 11 27	01	74-11-18	48	.4	1.4	.53	.02	.55	.17	7.8	1000
KANDIYOHI COUNTY												
45 23 38	094 53 43	01	75-05-01	1.8	12	.3	1.9	.48	2.4	.03	24	100
LAKE COUNTY												
47 21 10	091 10 45	01	75-03-25	47	29	.4	.13	.00	.13	.01	15	1100
47 05 40	091 39 59	01	75-03-22	2.5	9.5	.3	.04	.00	.04	.01	12	60
47 02 23	091 41 22	01	75-03-21	540	170	.1	1.8	1.7	3.5	.00	36	730
47 12 35	091 43 40	01	75-03-22	1.0	11	.4	.01	.01	.02	.00	13	30
47 21 03	091 16.57	01	75-04-16	420	47	.7	.30	.05	.35	.00	35	570
47 24 51	091 06 37	01	75-03-25	100	14	1.2	.10	.00	.10	.00	12	420
POPE COUNTY												
45 31 57	095 10 49	01	74-11-13	1.5	5.3	.1	.64	.00	.64	.27	26	60
45 40 36	095 14 30	01	75-05-01	1.5	2.3	.3	.50	.01	.51	.08	23	50
RAMSEY COUNTY												
46 44 19	092 32 15	01	74-12-11	4.0	1.7	.4	.80	.00	.80	.59	18	60
46 53 15	092 00 17	01	75-03-20	9.1	15	.9	.06	.43	.49	.00	15	90
46 52 16	092 06 25	01	75-03-20	1.8	13	.6	.07	.50	.57	.00	17	30
46 51 55	092 16 45	02	74-12-13	18	19	.3	.08	.57	.65	.01	31	200
46 54 08	092 20 34	01	74-12-12	1.9	12	.4	.06	.18	.24	.07	18	30
46 56 26	091 54 20	01	75-03-21	.9	14	1.4	.07	.01	.08	.00	9.0	330
46 58 29	092 08 37	01	74-11-30	3.2	5.1	.0	.13	.01	.14	.03	11	400
46 51 50	092 48 28	01	74-11-15	1500	1.8	.9	4.6	.08	4.7	.01	7.4	1000
46 58 03	092 50 51	01	74-11-15	8.6	16	.1	.15	6.1	6.3	.02	18	40
47 06 42	092 09 32	01	74-12-12	6.0	8.6	.1	.22	.20	.42	.01	27	30
47 05 48	092 24 33	01	74-12-03	1.1	2.2	.3	2.4	.02	2.4	.06	32	110
47 02 34	092 47 03	01	74-11-15	1.0	3.8	.3	.08	.04	.12	.05	17	80
47 03 25	092 55 47	01	74-11-19	17	21	.2	.31	.18	.49	.10	17	100
47 10 12	092 28 39	01	74-11-07	5.3	3.5	.6	.27	.00	.27	.02	12	100
47 10 02	093 03 20	01	74-11-24	1.4	5.3	.2	.31	.01	.32	.01	20	60

LATI-TUDE	LONGI-TUDE	SEQ. NO.	DATE OF SAMPLE	TOTAL IRON (FE) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	HARDNESS (CA,MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	SODIUM AD-SORPTION RATIO	PERCENT SODIUM	TOTAL NITROGEN (NO3) (MG/L)
			BECKER COUNTY								
46 52 39	095 25 13	01	75-07-29	7500	--	.41	240	32	.1	4	32
46 57 06	095 17 38	01	75-07-30	1300	170	.38	250	14	.1	2	3.1
46 58 11	095 25 13	01	75-07-30	5800	90	.35	240	2	.0	1	4.3
			CARLTON COUNTY								
46 25 03	092 35 40	01	74-12-21	390	20	.22	73	0	1.7	49	.62
46 31 10	092 27 58	01	75-03-19	620	20	.46	120	13	3.1	50	.93
46 33 45	092 38 03	01	74-12-22	90	40	.32	210	6	.5	15	.71
46 36 25	092 32 09	01	74-12-22	50	0	.14	74	4	.1	7	3.0
			CASS COUNTY								
46 27 21	094 43 38	01	75-07-31	8200	340	.20	96	33	.1	5	28
46 39 25	094 45 52	01	75-07-31	11000	110	.14	68	1	.2	10	2.6
			CLAY COUNTY								
47 24 09	091 47 28	01	74-12-06	70	10	.25	130	29	.2	8	15
			COOK COUNTY								
47 37 27	090 48 08	01	75-04-19	140	30	.26	28	1	4.0	81	.58
47 47 21	090 19 49	01	75-03-26	190	20	.18	110	9	.2	10	.18
47 42 24	090 31 47	01	75-03-26	150	90	.14	8	0	4.5	88	.00
47 50 50	089 57 56	01	75-04-17	90	100	4.09	1600	1500	3.3	30	8.4
47 57 52	089 41 29	01	75-03-29	1300	60	.60	290	120	.9	20	.44
			DAKOTA COUNTY								
44 47 04	093 17 00	01	75-09-06	660	50	.38	270	0	.1	4	1.7
			HUBBARD COUNTY								
46 49 10	094 54 46	01	75-07-29	40	20	.45	270	55	.1	3	17
46 58 01	094 48 38	01	75-07-29	10	0	.35	230	11	.1	3	1.5
46 54 45	094 52 11	01	75-07-29	1400	--	.37	220	0	.1	3	3.4
46 55 27	095 03 59	02	75-07-30	680	80	.37	250	0	.1	3	1.7
			AITKIN COUNTY								
47 05 01	093 11 27	01	74-11-18	420	100	.46	31	0	9.4	89	2.4
			KANDIYOHI COUNTY								
45 23 38	094 53 43	01	75-05-01	1600	100	.57	350	0	.4	10	11
			LAKE COUNTY								
47 21 10	091 10 45	01	75-03-25	140	30	.30	97	0	4.2	66	.58
47 05 40	091 39 59	01	75-03-22	80	10	.16	110	4	.3	12	.10
47 02 23	091 41 22	01	75-03-21	80	0	1.77	330	270	7.7	66	15
47 12 35	091 43 40	01	75-03-22	350	10	.21	140	6	.2	6	.09
47 21 03	091 16 57	01	75-04-16	60	30	1.24	250	210	5.5	63	1.6
47 24 51	091 06 37	01	75-03-25	90	70	.46	190	50	1.6	36	.44
			POPE COUNTY								
45 31 57	095 10 49	01	74-11-13	930	150	.37	230	0	.2	7	2.6
45 40 36	095 14 30	01	75-05-01	1200	210	.49	340	0	.2	5	2.3
			RAMSEY COUNTY								
46 44 19	092 32 15	01	74-12-11	210	70	.19	91	0	.5	22	3.5
46 53 15	092 00 17	01	75-03-20	90	10	.33	160	0	.4	20	2.2
46 52 16	092 06 25	01	75-03-20	100	0	.21	110	0	.6	22	2.5
46 51 55	092 16 45	02	74-12-13	90	0	.33	120	0	1.5	41	2.4
46 54 08	092 20 34	01	74-12-12	190	0	.22	140	14	.1	5	1.1
46 56 26	091 54 20	01	75-03-21	230	10	.23	30	0	3.4	77	.35
46 58 29	092 08 37	01	74-11-30	180	10	.17	5	0	4.3	45	.62
46 51 50	092 48 28	01	74-11-15	110	110	3.84	910	840	8.1	57	21
46 58 03	092 50 51	01	74-11-15	100	0	.22	100	34	.3	11	20
47 06 42	092 09 32	01	74-12-12	600	110	.18	100	21	.2	9	1.9
47 05 48	092 24 33	01	74-12-03	17000	580	.36	260	0	.2	7	11
47 02 34	092 47 03	01	74-11-15	490	120	.33	220	0	.3	10	.53
47 03 25	092 55 47	01	74-11-19	420	50	.39	190	0	1.2	30	2.2
47 10 12	092 28 39	01	74-11-07	90	80	.35	190	0	.9	25	1.2
47 10 02	093 03 20	01	74-11-24	360	290	.27	160	0	.2	6	1.4

LAT-I-TUDE	LONG-I-TUDE	SEQ. NO.	LOCAL IDENT-I-FIER		DATE OF SAMPLE	TIME	DEPTH (FT)	TEMPER-ATURE (DEG C)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	VOLA-TILE FILT-RABLE RESIDUE (MG/L)
RAMSEY COUNTY											
47 13 58	091 44 26	00	055.11.21CAC	R BAILEY	74-12-10	1400	36	--	255	161	48
47 14 45	092 25 06	01	055.16.18		74-11-07	1700	111	8.0	495	270	100
47 15 32	092 42 08	01	055.19.12CCB	GR NO R R	74-11-14	1200	69	6.0	235	132	35
47 14 23	092 49 00	01	055.20.24ABA	ELWENEUNORPP	74-11-24	1030	215	--	425	250	58
47 22 16	092 10 15	01	056.17.06BBA	A JOHNSON	74-12-03	1500	90	--	745	404	125
47 20 29	093 57 04	01	056.21.12CCC	SHER HOLDEN	74-11-23	--	33	--	275	186	72
47 20 27	093 57 03	01	056.21.13BAC	JIM SWEET	74-11-23	1700	102	--	365	207	72
47 22 21	092 18 04	01	057.15.31CCC	RUSKININI	74-12-05	1600	45	--	750	443	158
47 30 07	092 14 05	01	058.15.15CCC	R HJORMOS	74-11-30	1300	70	--	195	136	46
47 33 34	092 12 27	01	059.15.28DCB		74-12-04	1300	398	--	380	249	74
47 42 12	092 00 43	01	060.13.05DDD	L SAVOR	74-12-05	--	35	--	143	98	29
47 41 55	092 02 36	01	060.13.07ABC	MULFRA	74-12-05	--	425	--	298	186	64
WADENA COUNTY											
46 25 18	094 49 36	01	134.35.15DBC	COUNTY PARK	75-07-31	0940	32	8.0	450	251	92
46 34 55	094 54 15	01	136.35.19BCB	DNS NL NRRD	75-07-30	1755	14	7.0	165	94	43
46 45 46	094 49 27	01	138.35.14CCA	DR NL HTRVL	75-07-30	1445	9.0	12.5	130	64	52
46 44 16	095 06 11	01	138.35.27CBC	E GLUCKZIN	75-07-30	1610	11	11.5	450	256	86

LAT-I-TUDE	LONG-I-TUDE	SEQ. NO.	DATE OF SAMPLE	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	COLOR (PLAT-INUM-COBALT UNITS)	CARBON DIOXIDE (CO2) (MG/L)	PH (UNITS)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)
RAMSEY COUNTY												
47 13 58	091 44 26	00	74-12-10	158	3	12	7.5	36	9.1	4.1	.9	125
47 14 45	092 25 06	01	74-11-07	285	5	27	7.3	42	32	21	2.6	277
47 15 32	092 42 08	01	74-11-14	137	8	2.4	8.0	21	4.9	23	2.3	121
47 14 23	092 49 00	01	74-11-24	252	0	7.4	7.6	31	12	41	5.3	152
47 22 16	092 10 15	01	74-12-03	436	0	13	7.8	40	66	19	4.2	429
47 20 29	093 57 04	01	74-11-23	160	0	49	6.6	35	10	6.9	2.0	101
47 20 27	093 57 03	01	74-11-23	216	0	11	7.5	47	16	7.1	1.9	160
47 22 21	092 18 04	01	74-12-05	440	30	36	7.3	61	56	24	2.1	388
47 30 07	092 14 05	01	74-11-30	117	0	1.5	8.1	27	10	3.9	1.8	99
47 33 34	092 12 27	01	74-12-04	234	5	12	7.4	43	22	5.0	2.3	155
47 42 12	092 00 43	01	74-12-05	86	0	.6	8.5	12	8.1	4.2	.5	65
47 41 55	092 02 36	01	74-12-05	171	0	18	7.1	31	9.1	13	1.9	115
WADENA COUNTY												
46 25 18	094 49 36	01	75-07-31	217	6	4.5	7.9	51	16	2.8	3.0	184
46 34 55	094 54 15	01	75-07-30	96	15	4.8	7.5	23	4.1	2.2	.8	78
46 45 46	094 49 27	01	75-07-30	78	40	11	7.1	20	3.9	1.2	1.4	70
46 44 16	095 06 11	01	75-07-30	208	4	5.5	7.7	49	14	12	1.2	142

LAT-I-TUDE	LONG-I-TUDE	SEQ. NO.	DATE OF SAMPLE	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED BORON (B) (UG/L)
RAMSEY COUNTY												
47 13 58	091 44 26	00	74-12-10	1.8	7.6	.2	.10	.35	.45	.11	23	20
47 14 45	092 25 06	01	74-11-07	4.1	1.9	.3	.42	.00	.42	.00	14	110
47 15 32	092 42 08	01	74-11-14	3.4	7.1	.4	.06	.03	.09	.04	7.4	90
47 14 23	092 49 00	01	74-11-24	5.0	56	.3	1.2	.01	1.2	.00	10	400
47 22 16	092 10 15	01	74-12-03	1.3	22	.4	.10	.01	.11	.06	19	90
47 20 29	093 57 04	01	74-11-23	5.2	12	.1	.47	6.2	6.7	.00	26	100
47 20 27	093 57 03	01	74-11-23	2.2	14	.1	.31	.00	.31	.04	20	30
47 22 21	092 18 04	01	74-12-05	16	20	.2	.35	.03	.38	.13	27	40
47 30 07	092 14 05	01	74-11-30	1.0	5.4	.1	.05	.01	.04	.06	8.2	40
47 33 34	092 12 27	01	74-12-04	9.0	41	.3	.01	.06	.07	.00	18	40
47 42 12	092 00 43	01	74-12-05	1.3	7.3	.1	.10	.04	.14	.04	14	20
47 41 55	092 02 36	01	74-12-05	12	17	.3	.03	.14	.17	.00	17	350
WADENA COUNTY												
46 25 18	094 49 36	01	75-07-31	2.8	12	.1	.04	3.6	3.6	.05	19	2
46 34 55	094 54 15	01	75-07-30	.8	6.0	.1	.08	1.8	1.9	.07	12	0
46 45 46	094 49 27	01	75-07-30	.7	.7	.2	.79	.05	.84	.35	7.5	0
46 44 16	095 06 11	01	75-07-30	13	14	.1	.12	7.2	7.3	.06	19	50

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LATITUDE	LONGITUDE	SEQ. NO.	DATE OF SAMPLE	TOTAL IRON (FE) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	PERCENT SODIUM	TOTAL NITROGEN (NO3) (MG/L)
RAMSEY COUNTY											
47 13 58	091 44 26	06	74-12-10	70	0	.22	130	3	.2	0	2.0
47 14 45	092 25 06	01	74-11-07	330	120	.37	240	0	.8	10	1.9
47 15 32	092 42 08	01	74-11-14	1900	60	.18	73	0	1.2	40	.41
47 14 23	092 49 08	01	74-11-24	120	<10	.35	130	0	1.7	40	5.4
47 22 16	092 10 15	01	74-12-03	720	110	.55	390	0	.4	10	.49
47 20 28	093 57 04	01	74-11-23	170	1300	.25	130	28	.3	10	30
47 20 27	093 57 03	01	74-11-23	730	420	.28	180	4	.2	8	1.4
47 22 21	092 18 04	01	74-12-05	8400	550	.40	180	0	.5	12	1.7
47 30 07	092 14 05	01	74-11-30	150	100	.19	110	9	.2	7	.18
47 33 50	092 12 27	01	74-12-04	950	90	.34	200	43	.2	5	.31
47 42 12	092 00 43	01	74-12-05	40	50	.13	63	0	.2	13	.02
47 41 55	092 02 36	01	74-12-05	90	20	.25	110	0	.5	19	.75
WADENA COUNTY											
46 25 18	094 49 36	01	75-07-31	390	0	.34	190	10	.1	3	10
46 34 55	094 50 15	01	75-07-30	4300	160	.13	70	0	.1	0	4.9
46 45 46	094 49 27	01	75-07-30	13000	2400	.11	88	0	.1	4	5.7
46 44 18	095 06 11	01	75-07-30	100	20	.35	180	38	.4	13	42

LATITUDE	LONGITUDE	SEQ. NO.	LOCAL IDENTIFIER		DATE OF SAMPLE	TIME	TOTAL ALUMINUM (AL) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)
RAMSEY COUNTY											
46 51 50	092 48 28	01	052.20.12DDB1	W MAIN	74-11-15	1000	300	<10	0	10	<100
46 51 55	092 16 45	02	051.15.32BBB2	PIKE LK BC	74-12-13	1100	300	<10	<10	30	<100
47 06 42	092 09 32	01	053.14.06AAA		74-12-12	1800	100	<10	<10	<10	<100
47 33 50	092 12 27	01	059.15.26DCB		74-12-04	1300	100	<10	0	<10	<100

LATITUDE	LONGITUDE	SEQ. NO.	DATE OF SAMPLE	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL STRONTIUM (SR) (UG/L)	TOTAL ZINC (ZN) (UG/L)
RAMSEY COUNTY							
46 51 50	092 48 28	01	74-11-15	<50	0	6300	250
46 51 55	092 16 45	02	74-12-13	<50	0	700	270
47 06 42	092 09 32	01	74-12-12	<50	0	700	80
47 33 50	092 12 27	01	74-12-04	<50	0	180	400

SECTION 3. GROUND WATER RECORDS

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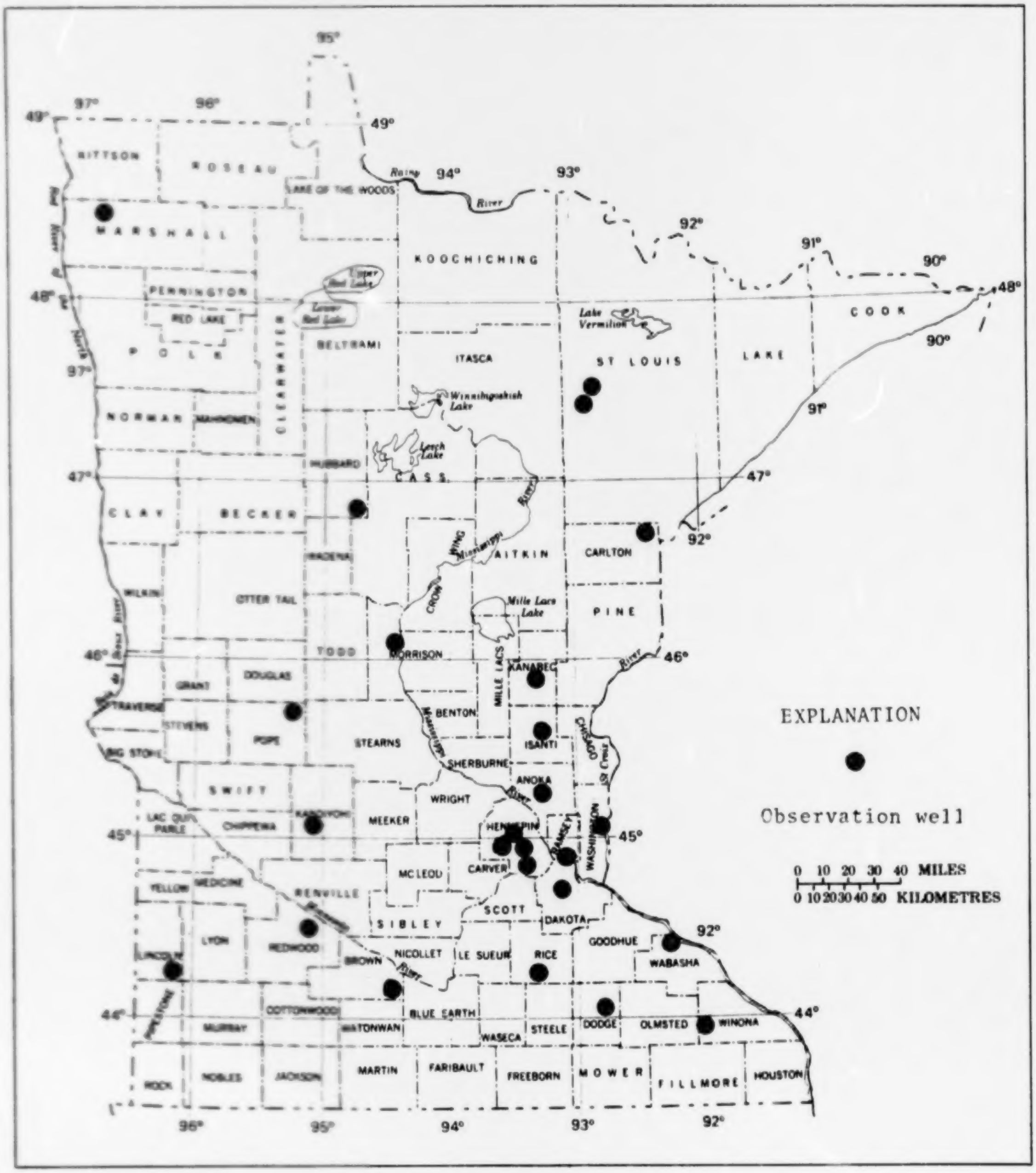
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Rainy River
Red River of the North
Bois de Sioux River
Minnesota River
Mississippi River
Crow Wing River
Crow River
St Croix River
Upper Red Lake
Lower Red Lake
Lake Vermilion
Winnibigoshish Lake
Leech Lake
Mille Lacs Lake
KITTSON
ROSEAU
LAKE OF THE WOODS
MARSHALL
KOOCHICHING
PENNINGTON
RED LAKE
POLK
CLEARWATER
BELTRAMI
ITASCA
ST LOUIS
LAKE
COOK
NORMAN
MAHNOMEN
HUBBARD
CASS
CLAY
BECKER
WADENA
AITKIN
CARLTON
WILKIN
OTTER TAIL
CROW WING
PINE
TODD
MORRISON
MILLE LACS
KANABEC
GRANT
DOUGLAS
TRAVERSE
STEVENS
POPE
STEARNS
BENTON
ISANTI
CHISAGO
BIG STONE
SHERBURNE
ANOKA
SWIFT
WRIGHT
LAC QUI PARLE
CHIPPEWA
KANDIYOHI
MEEKER
HENNEPIN
RAMSEY
WASHINGTON
YELLOW MEDICINE
RENVILLE
MC LEOD
CARVER
SCOTT
DAKOTA
SIBLEY
LINCOLN
LYON
REDWOOD
NICOLLET
LE SUEUR
RICE
GOODHUE
WABASHA
BROWN
PIPESTONE
MURRAY
COTTONWOOD
WATONWAN
BLUE EARTH
WASECA
STEELE
DODGE
OLMSTED
WINONA
ROCK
NOBLES
JACKSON
MARTIN
FARIBAULT
FREEBORN
MOWER
FILLMORE
HOUSTON
EXPLANATION
● Observation well
0 10 20 30 40 MILES
0 10 20 30 40 50 KILOMETRES

Figure 4.--Location of observation wells in Minnesota, 1975.

The observation-well program in Minnesota was continued during 1975 in cooperation with the Division of Waters, Soils and Minerals, Minnesota Department of Natural Resources, and the West-Central Minnesota Resource Conservation and Development Committee. Figure shows the location of observation wells included in this report.

Well-Numbering System

Wells are numbered according to their latitude and longitude, as explained on page 13. Local well numbers are also given.

The local well numbers are in accordance with the Bureau of Land Management's system of land subdivision. Eash well number is made up of three segments. The first segment indicates the township, the second the range, and the third the section in which the well is situated. The letters after the section number, which are assigned in a counterclockwise direction (beginning with the letter "a" in the northeast quarter), represent subdivisions of the section; the first letter denotes the 160-acre tract, the second the 40-acre tract, and the third the 10-acre tract. Numbers are added as suffixes to distinguish wells in the same tract. Thus, the number 108.30.9add designates the well in the SE¼SE¼NE¼ sec.9, T.108 N., R.30 W.

Well Descriptions and Water-Level Measurements

Water levels are reported in feet below land-surface datum, unless otherwise indicated.

Anoka County

451742N0931221.2. Local number 32.23.4aad2. U.S. Geol. Survey. Bored observation water-table well in glacial outwash sand, diam 2 in, depth 21 ft, screened 19-21. Lsd 916 ft above msl. MP top of casing, 2.50 ft above lsd. Highest water level 6.20 below lsd, July 30, 1975; lowest 11.77 below lsd, Feb. 6, 1970. Records available: 1969-75.

Highest water level for the day, from recorder graph, October 1974 to September 1975

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	9.98	9.94	9.95	10.25	10.35	10.43	9.90	6.51	7.83	6.52	8.93	8.75
10	9.98	9.85	9.98	10.05	10.34	10.48	9.78	6.57	8.15	7.23	9.11	8.69
15	10.03	9.84	10.04	10.28	.....	10.51	9.22	7.02	7.42	7.62	9.34	8.84
20	10.16	9.85	10.17	10.17	10.42	10.36	8.87	7.21	7.26	8.06	9.38	8.93
25	10.21	9.90	10.20	10.18	10.33	10.05	8.14	7.44	6.48	8.42	9.16	9.05
Eom	10.08	9.98	10.23	10.41	10.44	9.90	6.44	7.77	6.20	8.83	8.77	9.13

Brown County

441030N0942545.1. Local number 108.30.9add. Erwin Kjelshus. Drilled unused water-table well in glacial deposits, diam 16 in, depth 32 ft, casing information not available. Lsd 1,003 ft above msl. MP top of concrete cover, 0.40 ft above lsd. Highest water level 2.59 below lsd, Apr. 9, 1969; lowest 17.68 below lsd, Feb. 28, 1956. Records available: 1942-75.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 12, 1974	12.01	Jan. 18, 1975	13.99	May 4, 1975	3.16	July 24, 1975	7.69
21	12.07	Feb. 4	14.51	18	3.97	Aug. 3	9.05
Nov. 6	12.12	17	14.69	30	4.76	13	9.42
12	11.96	Mar. 4	15.14	June 15	5.26	27	11.48
20	12.08	14	15.32	27	4.60	Sept.10	12.46
Dec. 5	12.54	Apr. 17	4.63	July 3	5.19	17	12.75
24	13.26						

Carlton County

464250N0922742.1. Local number 49.17.23caa. City of Cloquet. Drilled unused water-table well in glacial sand and gravel, diam 12 in, depth 51 ft, screened 26-46. Lsd 1,230 ft above msl. MP top of wood platform, 1.40 ft above lsd. Highest water level 4.66 below lsd, Aug. 17, 1953; lowest 16.59 below lsd, Mar. 9, 1964. Records available: 1948-75.

Oct. 7, 1974	10.73	Feb. 10, 1975	12.49	Apr. 14, 1975	12.60	June 30, 1975	10.42
14	10.80	18	12.60	21	11.20	July 7	10.33
Dec. 16	11.65	24	12.65	28	10.98	21	10.66
23	11.80	Mar. 3	12.77	May 5	10.71	28	10.68
Jan. 6, 1975	11.99	11	12.85	12	10.72	Aug. 12	10.74
13	12.12	17	12.84	19	10.78	18	10.82
20	12.16	26	12.08	28	10.85	Sept. 2	10.73
27	12.32	31	12.22	June 16	10.52	17	10.95
Feb. 5	12.43	Apr. 7	12.33	24	10.57	30	11.08

Dakota County

444220N0930550.1. Local number 114.19.4ddal. Agricultural Experiment Station, Rosemount. Drilled irrigation artesian well in Jordan Sandstone of Late Cambrian age, diam 6 in, depth 415 ft, cased to 355. Lsd 940 ft above msl. MP top 1-in breather pipe, 2.10 ft above lsd. Highest water level 62.33 below lsd, Sept. 26, 1975; lowest 65.23 below lsd, Nov. 27, 1970. Records available: 1970-75.

Oct. 2, 1974	63.45	Jan. 21, 1975	63.86	May 28, 1975	63.10	Sept.26, 1975	62.33
Nov. 12	63.35	Mar. 4	63.83	July 8	62.80		
Dec. 13	63.60	Apr. 15	63.79	Aug. 19	62.73		

Dodge County

440400N0924516.1. Local number 107.16.16ccd. City of Mantorville. Drilled unused artesian well in St. Peter Sandstone of Middle Ordovician age, diam 12 to 8 in, depth 215 ft, cased 12-in 0-42, 8-in 0-155. Lsd 1,125 ft above msl. MP top of 1-in breather pipe, 2.20 ft above lsd. Highest water level 107.46 below lsd, Apr. 18, 1975; lowest 108.83 below lsd, Aug. 27, 1975. Records available: 1973-75.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 7, 1974	108.58	Jan. 23, 1975	107.94	Apr. 18, 1975	107.46	July 11, 1975	107.95
Nov. 15	108.11	Mar. 7	108.12	June 2	107.92	Aug. 27	108.83
Dec. 17	107.92						

Hennepin County

445615N0932123.1. Local number 117.21.16cca. City of St. Louis Park. Drilled unused artesian well in dolomite of Prairie du Chien Group of Early Ordovician age and Jordan Sandstone of Late Cambrian age, diam 16 in, depth 421 ft, reported cased to 280. Lsd 916.82 ft above msl. MP floor of well house, 0.70 ft above lsd. Highest water level 66.0 below lsd, Mar. 23, 1953; lowest 110.5 below lsd, July 31, 1959. Records available: 1953-75. Water levels affected by regional pumping.

Lowest water level for the day, from recorder graph, October 1974 to September 1975

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	83.9	80.1	79.4	78.0	80.4	79.9	77.3	80.7	84.7	87.6	90.8	84.4
10	85.3	79.1	79.2	80.0	80.0	79.4	79.5	81.7	82.9	89.1	89.6	82.3
15	82.5	81.8	78.1	81.3	80.5	80.1	79.2	83.5	80.5	92.9	94.1	80.3
20	81.7	80.6	81.0	80.2	80.2	80.7	77.3	87.8	86.1	101.0	86.3	78.9
25	84.7	79.0	77.7	80.3	79.9	80.5	80.0	85.9	87.6	97.5	83.1	79.7
Eom	82.4	78.2	78.5	80.8	80.2	79.8	78.9	81.4	87.4	106.9	81.5	79.5

445347N0932139.1. Local number 117.21.32dad1. City of Edina, well 9. Hansen Rd. and Benton Ave. Drilled public-supply artesian well in Hinckley Sandstone, of Winchell (1886), of Upper Precambrian age, diam 16 to 10 in, depth 1,130 ft, cased 24-in 0-124, 16-in 0-563, 10-in 533-1,010. Lsd, 933.29 ft above msl. MP hole in east side of pumpbase, 2.00 ft above lsd. Highest water level 230.81 below lsd, Apr. 20, 1962; lowest 369.60 below lsd, Aug. 28, 1970. Records available: 1961-75. Water levels affected by regional pumping.

Oct. 2, 1974	322.70	Jan. 21, 1975	287.03	May 28, 1975	306.44	Sept.30, 1975	297.51
Nov. 12	302.90	Mar. 4	288.64	July 14	289.60		
Dec. 12	293.66	Apr. 17	290.75	Aug. 19	313.89		

445740N0933330.1. Local number 117.23.11bbd1. Minnetonka Boat Works, Inc. Orono. Drilled observation artesian well in dolomite of Prairie du Chien Group of Early Ordovician age and Jordan Sandstone of Late Cambrian age, diam 6 in, depth 437, cased to 270. Lsd 930.81 ft above msl. MP wood floor of instrument shelter, 3.30 ft above lsd. Highest water level 14.05 below lsd, Apr. 30, 1954; lowest 32.43 below lsd, July 31, 1975. Records available: 1942-46, 1948-75. Recording gage installed Apr. 1975. Water levels affected by regional pumping. Oct. 3, 1974, 24.79; Nov. 13, 22.92; Dec. 12, 22.49; Jan. 22, 1975, 22.75; Mar. 5, 22.52; Apr. 17, 22.19.

Lowest water level for the day, from recorder graph, 1975

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	.....	.....	.....	.....	.....	.....	.....	22.12	23.30	24.26	25.76	23.78
10	.....	.....	.....	.....	.....	.....	.....	22.34	23.83	25.55	28.38	23.82
15	.....	.....	.....	.....	.....	.....	.....	22.75	23.05	26.82	29.23	24.01
20	.....	.....	.....	.....	.....	.....	.....	23.90	23.42	29.67	25.82	23.39
25	.....	.....	.....	.....	.....	.....	22.42	23.84	23.33	30.16	24.55	23.32
Eom	.....	.....	.....	.....	.....	.....	21.99	23.20	23.68	32.43	23.89	23.30

450223N0932318.1. Local number 118.21.7dcb1. City of New Hope. 47th Ave. North and Aquila Ave. Drilled unused artesian well in Jordan Sandstone of Late Cambrian age, diam 16 in, depth 422 ft, cased to 339. Lsd 933 ft above msl. MP top of wood platform, 3.00 ft above lsd. Highest water level 60.46 below lsd, Dec. 17, 1967; lowest 71.35 below lsd, July 11, 1970. Records available: 1965-75. Water levels affected by regional pumping.

Lowest water level for the day, from recorder graph, October 1974 to September 1975

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	64.01	63.34	62.56	62.47	62.67	62.69	62.96	62.33	63.44	63.56	65.96	64.13
10	63.71	63.02	62.39	62.38	62.58	62.64	62.65	63.21	63.44	63.84	65.57	64.47
15	63.47	62.99	62.57	62.91	62.98	62.89	62.53	63.06	63.19	63.87	66.49	63.10
20	63.92	62.86	62.81	62.70	62.65	62.74	62.65	63.55	63.83	66.28	64.92	63.45
25	64.01	63.00	62.57	62.54	62.65	62.97	62.74	64.51	63.88	67.12	64.17	63.24
Eom	63.84	62.82	62.55	63.11	62.88	62.47	62.47	63.23	63.80	68.65	64.27	62.96

Hubbard County

465142N0944322.1. Local number 139.32.16aaa. U.S. Geol. Survey. Badoura Nursery. Bored observation water-table well in glacial outwash sand, diam 1¼ in, depth 21 ft, screened 19-21. Lsd 1,423 ft above msl. MP top of casing, 2.00 ft above lsd. Highest water level 10.78 below lsd, Oct. 30, 1973; lowest 13.75 below lsd, July 24, Oct. 3, 9, 1973. Records available: 1970-75.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 1, 1974	11.90	Jan. 8, 1975	12.57	Apr. 9, 1975	13.18	July 8, 1975	11.03
8	11.94	14	12.62	15	13.18	16	10.95
15	12.01	21	12.70	22	12.50	21	11.03
22	12.10	28	12.74	29	12.04	29	11.22
29	12.15	Feb. 5	12.78	May 6	11.72	Aug. 5	11.37
Nov. 5	12.20	11	12.82	13	11.54	10	11.45
12	12.22	18	12.87	20	11.38	19	11.62
19	12.22	25	12.90	27	11.26	26	11.76
26	12.25	Mar. 4	12.97	June 3	11.35	Sept. 3	11.85
Dec. 3	12.34	12	13.04	10	11.44	9	11.92
10	12.37	18	13.07	17	11.48	16	12.00
18	12.42	25	13.10	24	11.29	23	12.09
24	12.44	31	13.12	July 1	11.12	30	12.07
Jan. 2, 1975	12.53						

Isanti County

453410N0931400.1. Local number 36.23.32acbl. City of Cambridge, well 4. Drilled public-supply artesian well in Hinckley Sandstone, of Winchell (1886), of Upper Precambrian age, diam 20 in, depth 630 ft, cased to 352. Lsd 960 ft above msl. MP edge of vent pipe, 3.00 ft above lsd. Highest water level 2.50 below lsd, Jan. 17, 1974; lowest 16.95 below lsd, July 11, 1974. Records available: 1972-75. Water levels affected by pumping of nearby wells.

Oct. 3, 1974	6.32	Jan. 2, 1975	5.36	Apr. 3, 1975	7.20	July 3, 1975	4.60
11	6.20	9	6.96	10	5.45	17	4.35
18	6.70	16	6.50	17	6.10	24	8.23
24	6.40	23	6.53	24	5.56	31	8.40
Nov. 7	4.68	Feb. 6	6.65	May 1	3.40	Aug. 7	6.10
14	5.44	13	6.76	7	4.74	14	6.50
21	3.94	21	6.58	22	6.08	21	3.30
28	4.27	27	5.46	29	5.65	28	5.00
Dec. 5	4.50	Mar. 6	6.65	June 5	5.83	Sept. 4	5.60
12	6.96	13	5.18	12	5.27	11	5.10
19	5.34	20	6.63	19	5.68	18	4.80
26	6.92	27	6.63	26	4.45	26	4.73

Kanabec County

455236N0931723.1. Local number 39.24.11ddc. City of Mora, well 3. Drilled public-supply artesian well in sand and gravel of Pleistocene age, diam 12 in, depth 170 ft, cased to 150, screened 150-170. Lsd 1,011 ft above msl. MP edge of vent pipe, 2.40 ft above lsd. Highest water level 32.28 below lsd, Apr. 6, 1973; lowest 44.36 below lsd, Apr. 22, 1968. Records available: 1968-75.

Oct. 4, 1974	38.76	Jan. 3, 1975	39.82	Apr. 11, 1975	41.46	July 11, 1975	34.57
11	39.00	10	39.90	18	41.16	18	35.13
18	39.20	17	40.00	25	39.99	25	35.32
25	39.37	24	40.14	May 2	40.19	Aug. 1	35.70
31	39.39	31	40.40	10	36.20	8	35.69
Nov. 8	39.43	Feb. 7	40.40	16	35.46	15	37.09
15	39.20	14	40.56	26	35.13	22	36.18
22	39.18	21	40.64	30	35.35	30	36.35
29	39.36	28	40.94	June 6	35.56	Sept. 5	36.49
Dec. 6	39.42	Mar. 8	41.04	13	34.90	12	36.65
13	39.64	14	41.14	20	35.67	22	36.85
20	39.70	27	41.27	27	35.77	26	36.98
27	39.77	Apr. 4	41.46	July 3	35.43		

Kandiyohi County

450730N0950148.1. Local number 119.35.14abbl. Burlington Northern, Inc. Drilled unused artesian well in sand and gravel of Pleistocene age, diam 10 in, depth 320 ft, screened 295-320. Lsd 1,140 ft above msl. MP wood floor of instrument shelter, 1.00 ft above lsd. Highest water level 12.78 below lsd, May 12, 1969; lowest 29.50 below lsd, Aug. 1, 1975. Records available: 1968-75. Water levels affected by pumping.

Highest water level for the day, from recorder graph, October 1974 to September 1975

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	22.36	22.27	21.30	18.88	20.31	20.32	20.62	20.48	20.84	21.67	27.92	22.79
10	22.23	22.40	20.98	18.76	20.40	20.44	20.87	20.67	21.04	22.52	28.03	22.40
15	22.10	22.65	20.83	18.77	20.50	20.51	20.60	20.61	20.46	22.55	27.98	22.41
20	22.22	22.34	20.05	19.60	20.36	20.52	20.85	.....	.....	26.23	25.16	22.68
25	22.44	22.29	19.44	19.69	20.36	20.51	20.94	.....	20.83	27.33	23.73	22.98
Eom	22.37	22.32	19.02	20.42	20.18	20.06	20.62	20.75	21.50	28.88	23.33	22.45

Lincoln County

441705N0960845.1. Local number 110.44.33dcd1. U.S. Geol. Survey. Drilled observation artesian well in Dakota Sandstone of Early Cretaceous age, diam 8 to 5 in, depth 967 ft, cased 8-in 0-449, 5-in 449-890, screened 890-900. Lsd 1,738 ft above msl. MP top of recorder platform, 3.50 ft above, lsd. Highest water level 248.41 below lsd, Apr. 20, 1970; lowest 250.57 below lsd, Nov. 29-30, 1974. Records available: 1969-75.

Highest water level for the day, from recorder graph, October 1974 to September 1975

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	249.92	249.98	249.97	249.96	250.06	249.86	250.01	249.69	249.70	249.86	250.21	250.27
10	249.91	249.98	249.97	249.56	249.79	250.00	249.94	249.90	249.85	249.99	250.15	250.09
15	......	249.99	249.87	249.96	250.04	249.96	249.89	249.88	249.66	249.97	250.17	250.22
20	......	249.93	249.98	249.72	249.79	249.85	249.84	249.58	249.82	249.99	250.14	250.08
25	250.13	250.06	250.04	249.66	249.79	249.78	249.81	249.77	249.86	250.11	250.01	250.28
Eom	249.87	250.21	250.09	250.18	249.93	249.65	249.60	249.81	249.97	250.13	250.09	250.17

Marshall County

482354N0965010.1. Local number 157.48.27baa. U.S. Geol. Survey. Bored observation artesian well in glacial Lake Agassiz beach deposits, diam 1¼ in, depth 24 ft, screened 22-24. Lsd 844 ft above msl. MP top of casing, 3.00 ft above lsd. Highest water level 2.30 below lsd, July 17, 1974; lowest 4.85 below lsd, Mar. 21, 1973. Records available: 1971-74.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 8, 1974	2.88	Feb. 11, 1975	3.46	May 5, 1975	3.96	July 29, 1975	1.88
Nov. 21	3.11	Mar. 26	3.91	June 18	3.08	Sept. 9	2.91
Jan. 7, 1975	3.27						

Morrison County

460444N0942125.1. Local number 130.29.8dcc. U.S. Geol. Survey. Drilled observation water-table well in glacial gravel, diam 2 in, depth 59 ft, screened 56-59. Lsd 1,149.02 ft above msl. MP top of casing, 2.10 ft above lsd. Highest water level 7.35 below lsd, July 28, 1972; lowest 19.75 below lsd, Aug. 4, 1961. Records available: 1949-75.

Oct. 4, 1974	11.21	Jan. 3, 1975	12.82	Apr. 4, 1975	13.65	July 3, 1975	12.87
11	11.57	10	12.88	11	13.69	11	12.66
18	11.70	17	12.44	18	12.97	18	13.85
25	11.87	24	12.97	25	12.51	25	13.87
Nov. 1	11.86	31	12.84	May 2	12.15	Aug. 1	13.26
8	11.84	Feb. 7	13.15	9	11.84	8	13.24
15	11.81	14	13.28	16	11.83	15	13.15
22	11.87	21	13.30	23	11.91	22	12.91
29	11.88	28	13.39	30	11.87	29	12.78
Dec. 6	12.07	Mar. 7	13.51	June 6	12.97	Sept. 5	12.68
13	12.06	14	13.55	13	13.45	12	12.68
20	12.34	21	13.61	20	12.81	19	12.67
27	12.36	28	13.55	27	13.26	26	12.86

Pope County

454230N0951430.1. Local number 126.36.20bcc1. U.S. Geol. Survey. Bored observation water-table well in glacial outwash sand and gravel, diam 2 in, depth 17 ft, screened 14-17. Lsd 1,354 ft above msl. MP top of casing, 1.00 ft above lsd. Highest water level 3.84 below lsd, July 27, 1972; lowest 9.22 below lsd, Mar. 4, 1975. Records available: 1966-75.

Oct. 11, 1974	8.27	Jan. 23, 1975	8.98	Apr. 25, 1975	7.88	July 31, 1975	6.25
Nov. 8	8.47	Mar. 4	9.22	May 30	6.59	Aug. 27	6.39
Dec. 17	8.79	Apr. 3	9.18	June 30	6.18	Sept.13	6.87

Ramsey County

445648N0930534.2. Local number 28.22.6abd2. Northwestern National Bank. 55 East 5th St., St. Paul. Drilled air conditioning artesian well in dolomite of Prairie du Chien Group of Early Ordovician age and Jordan Sandstone of Late Cambrian age, diam 16 in, depth 355 ft, cased to 212. Lsd 770 ft above msl. MP edge of vent pipe, 7.50 ft below lsd. Highest water level 58.34 below lsd, Apr. 21, 1975; lowest 134.00 below lsd, Aug. 16, 1972. Records available: 1971-75. Water levels affected by pumping of nearby wells.

Oct. 4, 1974	91.25	Mar. 10, 1975	61.63	May 6, 1975	67.13	July 29, 1975	118.80
Nov. 18	64.00	Apr. 10	61.32	June 3	93.18	Aug. 12	120.50
Dec. 16	63.55	21	58.34	18	103.79	Sept. 2	107.15
Jan. 15, 1975	63.02	23	68.10	July 3	120.10	23	75.30
Feb. 14	62.00	24	58.85	16	116.10		

Redwood County

443051N0950742.1. Local number 112.36.14aaa. Frank Boots. Drilled unused artesian well in glacial sand and gravel, diam 4 in, depth 214 ft, reported screened 213-218. Lsd 1,038.9 ft above msl. MP top of casing, 2.00 ft above lsd. Highest water level 30.72 below lsd, Sept. 10, 1953; lowest 43.69 below lsd, Aug. 16, 1975. Records available: 1952-75. Water levels affected by regional pumping.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 5, 1974	41.16	Dec. 28, 1974	40.63	Apr. 19, 1975	41.09	July 26, 1975	43.05
12	41.07	Jan. 4, 1975	40.66	26	41.06	Aug. 2	43.43
19	41.03	18	40.72	May 3	40.89	9	43.54
26	41.02	Feb. 1	40.79	10	41.18	16	43.69
Nov. 2	40.92	8	40.77	17	41.32	23	43.35
9	40.83	15	40.75	25	41.66	30	43.13
16	40.75	22	40.74	31	41.93	Sept. 6	43.03
23	40.72	Mar. 1	40.84	June 7	42.05	13	42.82
30	40.77	8	41.02	28	41.74	20	42.31
Dec. 7	40.76	15	40.87	July 6	42.03	28	42.18
14	40.96	22	41.06	12	42.23		
21	40.86	Apr. 12	41.13	20	42.95		

Rice County

441609N0931732.1. Local number 109.21.1dcc. Northern States Power Co. Drilled domestic artesian well in Jordan Sandstone of Late Cambrian age, diam 6 in, depth 483 ft, cased to 401. Lsd 1,060 ft above msl. MP top of 1-in breather pipe, 3.70 ft above lsd. Highest water level 70.19 below lsd, June 7, 1974; lowest 72.19 below lsd, Aug. 1, 1975. Records available: 1973-75.

Oct. 3, 1974	70.76	Jan. 3, 1975	70.84	Apr. 4, 1975	70.68	July 2, 1975	71.06
10	70.77	10	70.77	10	71.41	11	70.77
17	70.93	17	71.05	18	71.22	18	71.07
24	71.00	23	71.03	25	70.91	25	71.26
30	70.93	Feb. 3	71.08	May 2	70.63	Aug. 1	72.19
Nov. 8	71.09	7	71.12	9	70.61	9	71.64
14	70.86	14	71.15	16	70.55	15	71.03
22	70.75	21	71.10	23	70.61	22	70.88
27	70.85	28	71.10	30	70.52	29	71.02
Dec. 5	71.03	Mar. 7	71.13	June 6	70.76	Sept. 4	71.26
13	71.11	14	71.16	13	70.49	11	71.04
19	70.92	21	71.14	20	70.82	19	70.79
26	70.73	28	70.70	27	70.89	26	71.25

St. Louis County

472638N0925336.1. Local number 57.20.5dad1. Burlington Northern, Inc. Drilled unused artesian well in Biwabik Iron-Formation of Middle Precambrian age, diam 12 to 6 in, depth 430 ft, cased to 315. Lsd 1,470 ft above msl. MP top of wood platform, 1.20 ft above lsd. Highest water level 55.29 below lsd, Sept. 22, 1972; lowest 69.07 below lsd, Jan. 16, 1965. Records available: 1955-75.

Nov. 1, 1974	57.32	Feb. 21, 1975	57.70	May 14, 1975	58.72	Aug. 14, 1975	58.29
Dec. 6	57.19	Apr. 3	58.20	June 26	58.45	Sept.18	58.07
Jan. 9, 1975	57.42						

473011N0925243.1. Local number 58.20.16dbc1. City of Chisholm. Drilled unused artesian well in glacial outwash sand and gravel, diam 12 in, depth 40 ft, screened 30-40. Lsd 1,500 ft above msl. MP top of wood platform, 1.70 ft above lsd. Highest water level 0.23 below lsd, May 10, 1954; lowest 15.60 below lsd, Mar. 23-24, 1957. Records available: 1953-75. Water levels affected by pumping.

Nov. 1, 1974	10.02	Feb. 21, 1975	11.11	May 14, 1975	3.57	Aug. 13, 1975	7.09
Dec. 6	8.98	Apr. 3	11.41	June 26	5.25	Sept.18	8.43
Jan. 9, 1975	9.23						

Wabasha County

442708N0921554.1. Local number 111.12.14bbd. City of Lake City. Drilled unused artesian well in Mt. Simon Sandstone of Late Cambrian age, diam 16 in, depth 430 ft, cased to 258. Lsd 685 ft above msl. MP top of casing, 1.00 ft above lsd. Highest water level 3.63 below lsd, May 5, 1975; lowest 11.33 below lsd, Sept. 30, 1974. Records available: 1974-75.

Oct. 7, 1974	11.28	Jan. 6, 1975	10.91	Apr. 7, 1975	10.86	July 7, 1975	6.22
14	11.05	13	11.10	14	10.25	14	6.98
21	11.24	20	11.00	21	8.14	21	8.49
28	11.00	27	11.00	28	4.31	28	9.63
Nov. 4	10.88	Feb. 3	11.10	May 5	3.63	Aug. 4	10.17
12	10.74	10	10.72	12	4.50	11	10.35
18	10.90	17	10.73	19	5.90	18	10.27
25	11.08	24	10.57	26	7.22	25	9.93
Dec. 2	11.10	Mar. 3	10.94	June 2	7.85	Sept. 2	10.26
9	10.99	10	10.92	9	8.73	8	10.71
16	10.65	17	10.95	16	8.54	15	10.29
22	11.09	24	10.30	23	7.62	22	10.56
30	11.20	31	10.47	30	6.90	29	10.57

Washington County

450328N0924829.1. Local number 30.20.28acdl. City of Stillwater, well 3. Mulberry and 2nd St. Drilled unused artesian well in Ironton and Galesville Sandstones of Late Cambrian age, diam 24 in, depth 440 ft, cased to 237. Lsd 718.32 ft above msl. MP top of wood platform, 1.30 ft above lsd. Highest water level 6.8 Apr. 21, 1974; lowest 26.8 below lsd, July 29, 1967. Records available: 1967-75. Water levels affected by pumping.

Lowest water level for the day, from recorder graph, October 1974 to September 1975

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	11.2	10.4	10.1	8.1	10.5	10.1	10.7	8.3	8.3	9.5	17.8	17.1
10	11.7	9.2	9.9	7.8	....	10.1	10.6	7.8	8.5	15.9	12.4	17.0
15	12.2	10.4	8.7	8.8	....	9.4	10.2	9.4	7.9	15.7	16.9	16.4
20	9.9	10.5	10.3	9.7	....	10.2	8.5	9.3	8.4	11.3	17.7	16.7
25	11.0	10.6	8.6	9.0	10.4	10.3	8.8	8.2	14.0	17.1	16.0	17.4
Eom	10.6	9.0	8.3	10.6	11.0	9.4	8.2	10.0	14.8	18.5	11.4	16.9

Winona County

435756N0920342.1. Local number 106.10.19dda. City of St. Charles, well 1. Drilled unused water-table well in dolomite of Prairie du Chien Group of Early Ordovician age, diam 10 in, depth 175 ft, cased to 30. Lsd 1,160 ft above msl. MP hole in pump base, 2.25 ft above lsd. Highest water level 32.72 below lsd, July 19, 1974; lowest 45.88 below lsd, Feb. 21, 1975. Records available: 1973-75. Water levels affected by pumping.

Date	Water levels	Date	Water levels	Date	Water levels	Date	Water levels
Oct. 4, 1974	37.15	Jan. 3, 1975	42.35	Apr. 4, 1975	45.35	July 11, 1975	38.65
11	37.65	10	42.95	11	44.91	18	44.47
18	38.33	17	43.61	18	43.47	25	38.75
25	37.45	24	44.15	25	43.54	Aug. 1	38.25
Nov. 1	37.50	31	44.75	May 2	42.14	8	39.07
8	39.51	Feb. 8	44.93	9	41.36	15	39.45
15	40.00	14	[illegible]	16	41.03	22	39.65
22	40.45	21	45.88	23	40.75	29	39.65
29	40.95	28	45.26	30	40.22	Sept. 5	40.30
Dec. 6	41.05	Mar. 7	[illegible]	June 6	41.15	12	40.65
13	41.55	14	45.55	13	40.35	19	40.72
20	42.05	21	44.91	20	40.38	26	41.31
27	42.32	28	44.96	27	41.39		

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CALENDAR FOR WATER YEAR 1975

1974

OCTOBER

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

NOVEMBER

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

DECEMBER

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

1975

JANUARY

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

FEBRUARY

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	

MARCH

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

APRIL

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

MAY

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

JUNE

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

JULY

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

AUGUST

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

SEPTEMBER

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				